Predicting Physical, Verbal, Social, Racial, and Sexual Bullying with Individual and Environmental Factors from an Evolutionary Ecological Framework

Ann Farrell, B. A. (Honors)

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Faculty of Social Science, Brock University
St. Catharines, Ontario

Abstract

Evidence exists for subtypes of bullying, but there is a lack of studies simultaneously investigating the factors that influence each subtype. The purpose of my thesis was to investigate how individual and environmental factors independently and interactively predict physical, verbal, social, racial, and sexual bullying using an evolutionary ecological framework. Adolescents (N = 225, M = 14.05, SD = 1.54) completed self-reports on demographics, HEXACO personality, Rothbart's temperament, parenting, friendship quality, school connectedness, and socio-economic status. Subtypes were predicted by low Honesty-Humility in addition to other personality and demographic factors with the exception of physical bullying, which was predicted by environmental factors. Results suggest adolescents adaptively and selectively use bullying to exploit victims and obtain resources, although the subtype used may depend on individual factors bullies possess within Bronfenbrenner's microsystem, instead of the meso- and exo-systems. Anti-bullying efforts should target these factors and reinforce alternative strategies to obtain resources.

Keywords: bullying, subtypes, adolescents, ecology, evolution

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Introduction

Bullying is a significant social problem that can occur within adolescent peer networks. It is defined as an imbalance of power, where an individual with greater physical, psychological, and/or social power purposely and repeatedly hurts a weaker individual (Olweus, 1993). This important issue involves 100 to 600 million adolescents every year across the world (Volk, Craig, Boyce, & King, 2006), with up to 15% of adolescents as bullies, 14% as victims, and 4.4% as bully-victims (Espelage & Holt, 2007). Bullying peaks during middle adolescence (Volk et al., 2006) since this is a developmental period with greater independence from the family and expansion of peer networks (Totura et al., 2009). Thus, negative peer relationships in the form of bullying can result in adverse outcomes for both bullies (e.g., substance abuse, delinquency, violence; Hong & Espelage, 2012; Totura et al., 2009) and victims (e.g., peer and school avoidance, depression, anxiety; Olweus, 1993; Pontzer, 2010; Swearer & Doll, 2001; Volk et al., 2006). In order to prevent bullying and the potential negative consequences, it is important to understand the specific subtypes of bullying since each subtype may be influenced by different individual and environmental factors.

The subtypes of bullying that I will investigate in my thesis are physical, verbal, social, racial, and sexual bullying. Physical bullying is overt including hitting, pushing, kicking, and vandalizing (Smokowski & Kopasz, 2005; Wang, Iannotti, & Luk 2012; Wang, Iannotti, Luk, & Nansel, 2010). Verbal bullying is auditory involving words to directly destruct or embarrass victims, such as threatening, name-calling, and mocking (Monks et al., 2009; Smokowski & Kopasz, 2005; Wang et al., 2012). Social bullying is covert, such as exclusion, rumour spreading, and gossiping, (Wang et al., 2010; 2012).

Racial and sexual bullying can be both overt and covert, including racial or sexual gestures, jokes, rumours, and comments (Monks et al., 2009; Pontzer, 2010; Volk et al., 2006).

Once the five subtypes of bullying are differentiated, the individual and environmental factors that may facilitate these subtypes can be investigated. This may help indicate the factors that should be targeted in anti-bullying interventions. While several individual and environmental factors have been researched in previous studies on bullying, these studies have often explored individual and environmental factors in isolation (e.g., Bollmer, Milich, Harris, & Maras; 2005; Elsaesser, Gorman-Smith, & Henry, 2013) or they have looked at several factors in relation to a measure of global bullying rather than to bullying subtypes (e.g., Bowes et al., 2009; Connolly & O'Moore, 2003). This gives rise to several interesting questions, such as what happens when many of these independent and environmental factors are explored together for each subtype of bullying? Will findings of previous studies that independently explored these factors be replicated, or will factors that are understudied turn out to be stronger predictors? Additionally, will these factors interact with each other to moderate the prediction of each subtype of bullying?

Proposed Research Objectives

In order to address these questions, I will simultaneously investigate the associations between the five subtypes of bullying with four individual factors of sex, age, temperament, and personality, and four environmental factors of perceptions of parents, friendship quality, school connectedness, and socio-economic status (SES). The guiding primary research question is: Which individual and environmental factors will

significantly predict each of the five subtypes of bullying in a simultaneous analysis? The secondary research question is: Will these factors have independent or interactive effects on the subtypes of bullying? In the next sections, I will review previous findings on these eight factors and bullying through my evolutionary ecological theoretical lens. I will conclude the review with an in-depth discussion of the current study and corresponding hypotheses.

Bullying from an Evolutionary Ecological Theoretical Framework

Previous studies have often explored bullying from a sole evolutionary (e.g., Volk, Camilleri, Dane, & Marini, 2012) or ecological (e.g., Hong & Espelage, 2012) framework. However, research in the Volk Lab suggests combining the two complimentary theories into an evolutionary ecological framework (Dawkins, 1989; Gordon, 2011; Heft, 2013). To begin with, evolutionary theory suggests that the primary goal of life is to reproduce and pass on genes to future generations (Dawkins, 1989). Thus, individuals are adapted to behave in ways that will allow them to compete with members of the same species for resources that will increase their chances of reproduction (Belsky, Steinberg, & Draper, 1991; Dawkins, 1989; Summers, 2005). One significant method of acquiring resources is through dominating competitors (Warren, Schoppelrey, Moberg, & McDonald, 2005). Competition allows a hierarchy to be developed within a society, where those who are dominant acquire greater status, resources, and reproductive success (Hawley, 1999).

Contrary to stereotypes of bullies as maladaptive aggressors, findings suggest that bullying may be an evolutionary adaptation to obtain resources (Volk et al., 2012). Adolescents may use bullying as a strategy to compete with and establish their

dominance over their peers in order to acquire resources such as money, dating and/or sexual partners, social status, and popularity (Volk et al., 2012). Researchers also suggest that bullies may have good social skills, Theory of Mind, and social competence that they use through strategic and selective bullying behaviors (Caravita, Di Blasio, & Salmivalli, 2010; Vaillancourt, Hymel, & McDougall, 2003). Despite the advantages of bullying, not all adolescents are bullies. One reason may be due to the long-term costs associated with bullying such as punishment and conflict, despite the short-term benefits of resources (Volk et al., 2012). This suggests that bullying may be a facultative adaptation, or an adaptation that emerges only under specific environmental conditions (Underwood, 1954).

The ecological theory focuses on adaptation to one's environment through the ongoing interactions between an individual and multiple environmental systems (Bronfenbrenner, 1977; Gordon, 2011; Heft, 2013; Levin et al., 2012; Neal & Neal, 2013). One of the most popular models for human development is Bronfenbrenner's Ecological Systems Theory (EST; Bronfenbrenner, 1977; 1979). This model explains that human development can be scientifically studied by looking at the reciprocal relationship, or proximal processes (Bronfenbrenner & Morris, 2006), between an individual and the environment. Consequently, each ecological environment is nested within one another. Since no process can occur in isolation, it is important to study all of these systems within context (Bronfenbrenner & Morris, 2006). At the center is the microsystem, which includes both the individual's dispositions and the immediate settings that the individual spends time in, such as the family or peers (Bronfenbrenner & Morris, 2006). The next system is the mesosystem, which includes the relationships between microsystems, such

as within a school (Bronfenbrenner, 1979). The mesosystem is followed by the exosystem, which includes social structures that indirectly influence both the individual and his or her settings, such as the neighbourhood. The exosystem can include settings of power, which indicate the individuals who control the distribution of resources (Bronfenbrenner, 1979). Next, the macrosystem involves institutional and cultural prototypes within a society, for example the purposes of a school classroom. Finally, the chronosystem includes changes across time that influences the other systems, such as the transition between middle school to high school (Neal & Neal, 2013).

Therefore, I will combine both evolutionary and ecological theories to explain why adolescents may engage in bullying. Cues in one environment (e.g., competition, scarce resources, social hierarchy) may signal to adolescents that the benefits of bullying may outweigh the potential costs (Volk et al., 2012). This makes the ecological theory very relevant; as such cues may vary from one environment to another. Additionally, different predispositions and environmental cues may influence individuals to weigh the evolutionary advantages and disadvantages to using one subtype of bullying over another subtype (Volk et al., 2012). However, it is important to note that my thesis is inspired by the ecological model but is not a true ecological study. This is because I will measure adolescent perceptions of the individual and environmental factors within the micro-, meso-, and exo- systems instead of an actual measure of the systems. These perceptions may influence which subtype of bullying adolescents decide to use.

Bullying and Individual Factors (Microsystem)

Individual factors may predispose adolescents to engage in bullying (Isaacs, Voeten, & Salmivalli, 2013). In order for behaviors to be evolutionarily adaptive to the

environment, natural or sexual selection of genes is required, where genes must be passed onto future generations (Dawkins, 1989). Bullying may be associated with many genes that control individual factors such as sex, personality, and temperament (Volk et al., 2012).

Sex and Age. Sex and age may be important biological dispositions that can influence bullying behaviors. The majority of bullying studies report that overall bullying peaks during middle adolescence, and males engage in it more than females (Barboza et al., 2009; Khoury-Kassabri, Benbenishty, Astor, & Zeira, 2004; Smokowski & Kopasz, 2005). However, sex and age differences are evident for each subtype. For instance, rates of physical bullying is often highest among males, during early adolescence (Boulton, Trueman, & Flemington, 2002; Monks et al., 2009; Pontzer, 2010; Wang et al., 2010; 2012). In contrast, social and verbal bullying maintain high levels of occurrence throughout adolescence. Additionally, social bullying is used more often than other subtypes by females (Boulton et al., 2002; Monks et al., 2009; Pontzer, 2010; Wang et al., 2010; 2012). Racial and sexual bullying are often associated with older and male adolescents (Espelage, Low, & De La Rue, 2012; Hong & Espelage, 2012; Larochette, Murphy, & Craig, 2010; Volk et al., 2006). Considering bullies engaging in overt subtypes have a greater risk for being identified and punished, these findings are logical. In comparison to females, males are evolutionarily more tolerant to take risks due to their greater variability in reproduction, especially if it means demonstrating traits attractive to potential mates, such as physical strength and dominance (Archer, 2009; Benenson, 2009; Volk et al., 2012). In sum, these findings suggest that different sexes and ages may be associated with specific subtypes of bullying.

Temperament and Personality. In addition to sex and age, temperament and personality traits may predispose and provide advantages for adolescents to engage in specific bullying behaviors. However, these two factors have been understudied in the context of the subtypes of bullying. From an evolutionary perspective, traits can predispose some adolescents to differentially weigh the costs and benefits from engaging in strategic bullying (Volk et al., 2012). Temperament is defined as "constitutionally based individual differences in reactivity and self-regulation, in the domains of affect, activity, and attention" (Rothbart & Bates, 2006, p. 100). Reactivity includes how fast an individual responds to stimuli, and self-regulation is how well an individual is able to control these responses (Henderson & Wachs, 2007; Rothbart, Ahadi, & Evans, 2000; Rothbart & Bates, 2006; Shiner & DeYoung, 2013). Personality is defined as a moderately stable interaction between genetic disposition and adapting to the environment and thus includes cognitions, thoughts, and values (Grist & McCord, 2010; McAdams & Pals, 2006).

Despite these different definitions, several studies demonstrated that at a dispositional level, temperament and personality may consist of similar, moderately stable traits. For example, a study by Farrell, Brook, Dane, Marini, and Volk (in press) found that that temperament and personality overlapped in dispositional traits in the domains of self-regulation, and emotional reactivity involving positive affect, fear, frustration/anger, and social connectedness. However, one difference is that temperament is typically applied to infants and children while personality is applied to adults (Shiner & DeYoung, 2013). Consequently, personality may include a wider array of traits that develop with life experience and maturation, in comparison to biologically rooted

temperamental predispositions that appear from early life (De Pauw & Mervielde, 2010; Grist & McCord, 2010; Shiner & Caspi, 2012). In fact, the study by Farrell and colleagues (in press) found traits in personality that involve complex cognitions, goals, and values, did not overlap with temperament. Considering the lack of empirical evidence on these two factors and the subtypes of bullying, it is important to investigate both of them, since middle adolescence overlaps both late childhood and early adulthood.

Temperament and bullying. A well-known temperament model created by Rothbart (1981) is greatly supported by empirical data (Rothbart & Bates, 2006; Shiner & DeYoung, 2013). The four factors that comprise Rothbart's model are Surgency, Frustration, Effortful Control, and Affiliation. Surgency is how much an individual is willing to approach a variety of stimulation for high intensity pleasure (Grist & McCord, 2010). In Rothbart's revised measure of the Early Adolescent Temperament Questionnaire (EATQ-R; Capaldi & Rothbart, 1992; Ellis & Rothbart, 2001), Surgency also includes low levels of shyness and fear, which reflect avoidance behaviors. Frustration includes how much irritation and aggression one feels when their goals and tasks are interrupted, and thus reflects approach behaviors (Evans & Rothbart, 2007). Effortful Control involves self-regulation in emotions and behaviors, and is composed of activation control (completing behaviors that one wants to escape), inhibition control (regulating unsuitable behaviors), and attention (concentration and attention) (Grist & McCord, 2010; Henderson & Wachs, 2007; Shiner & DeYoung, 2013). Affiliation is not often included in other temperament models, but Rothbart found evidence for the development of this trait during adolescence, separate from affiliative behaviors associated with Surgency and shyness, but specifically concerned with emotional

bonding, social warmth, and empathy (Putnam, Ellis, & Rothbart, 2001; Rothbart & Bates, 2006).

Although there is a lack of empirical findings on the five subtypes of bullying with temperament, several studies looked at temperament in relation to aggression, which suggest implications for adolescent bullying (Dane, Kennedy, Spring, Volk, & Marini, 2012; Dane & Marini, 2014; Frizzo, Bisol, & Lara, 2013; Marini, Dane, & Kennedy, 2010; Marini, Volk, & Dane, 2009). These studies found that adolescents with poor regulation of anger and irritation were more likely to engage in direct forms of aggression. Thus, these characterize the low ends of Effortful Control and Frustration respectively, which may contribute to direct physical and verbal bullying. Other researchers found that high approach to positive rewards in combination with low self-regulation has been associated with direct aggression (Dane et al., 2012; Dane & Marini, 2014). This may be due to the inability to delay the immediate gratification when acting aggressively during times of high negative emotions. Furthermore, in comparison to adolescents with high Effortful Control, adolescents with poor Effortful Control had higher levels of antisocial beliefs, which may contribute to antisocial direct bullying (Dane et al., 2012). In sum, these studies demonstrate that traits associated with the domains of self-regulation (low Effortful Control) and emotional reactivity involving frustration and anger (high Frustration) may be associated with physical and verbal bullying.

Differences in temperament dimensions are also suggested for social, racial, and sexual bullying. Researchers found that adolescents who are callous or unempathic, characterized by the temperamental dimensions of low Frustration, low Affiliation, and

high negative emotions, were likely to engage in prosocial, indirect subtypes of aggression (Frick & Morris, 2004; Marini et al., 2010; Nigg, 2006; Rothbart & Posner, 2006). These adolescents may be less likely to have remorse or empathy toward their victims, and unconcerned with how indirect bullying behaviors could impact victims. Consequently, adolescents engaging in indirect bullying may require social bonds to successfully accomplish these behaviors, and thus high Surgency (Nigg, 2006). However, these bonds may not be genuine since they are being used for manipulation (low Affiliation). Additionally, a study by Dane and Marini (2014) found that high Effortful Control was associated with reactive-relational aggression, suggesting that planning abilities and emotional inhibition may help adolescents engage in goal-oriented relational aggression. Altogether, these findings suggest that traits associated with emotional reactivity involving frustration and anger (low Frustration), social connectedness (low Affiliation), positive affect (high Surgency), and self-regulation (high Effortful Control) may be associated with social, racial, and sexual bullying. Additionally, the findings suggest that Frustration is an important factor associated with bullying, but may work in multiple ways.

Personality and bullying. A model of personality called the HEXACO has recently been developed with the view that a different level of each personality factor has corresponding evolutionary advantages (Lee & Ashton, 2012b). The six factors in the HEXACO stand for Honesty-Humility (H), Emotionality (E), Extraversion (X), Agreeableness (A), Conscientiousness (C), and Openness to Experience (O). The factors of Extraversion (participation in social tasks, leadership), Conscientiousness (participation in goal oriented tasks, organizing, self-control, planning), and Openness to

Experience (participation in tasks related to ideas and curiosity), in the HEXACO are similar to these three factors in the Big Five/Five Factor models of personality (Ashton & Lee, 2007; Costa & McCrae, 1992; Goldberg, 1990). The key differences lie primarily in Agreeableness, Honesty-Humility, and Emotionality.

Essentially, Agreeableness in the Big Five is split into Agreeableness and Honesty-Humility in the HEXACO (Shiner & DeYoung, 2013). The high pole of the HEXACO's Agreeableness includes tolerance and forgiveness when exploited, while the low pole includes a tendency to retaliate (Ashton & Lee, 2007). The high pole of Honesty-Humility includes cooperation, while the low pole includes exploitation of others for personal gain (Ashton & Lee, 2007; Lee & Ashton, 2005; 2012; Tani, Greenman, Schneider, & Fregoso, 2003). In sum, the traits of Agreeableness and Honesty-Humility in the HEXACO distinguish being exploited from exploiting others. Finally, the HEXACO's Emotionality is similar to the Big Five's Neuroticism, and the high pole includes anxiety, empathy, and attachment, but the low pole includes reciprocal altruism in order to promote kin survival (Ashton & Lee, 2007).

Like temperament, researchers suggest several personality factors are associated with bullying. Studies that found associations between personality and bullying primarily used the popular FFM/Big Five models of personality (e.g., Connolly & O'Moore, 2003; Pontzer, 2010). These studies found that the level of anger and tolerance in FFM/Big Five Agreeableness was associated with global bullying. To my knowledge, only two studies investigated the associations between the HEXACO and bullying (Book, Volk, & Hosker, 2012; Farrell, Della Cioppa, Volk, & Book, 2014). These studies found that instead of Agreeableness, Honesty-Humility was associated with global bullying.

Furthermore, the study by Farrell and colleagues (2014) found Honesty-Humility was significantly correlated with five subtypes of bullying (physical, verbal, social, racial, sexual), and significantly predicted verbal, social, and sexual bullying. In addition, other studies suggested characteristics that may be associated with Honesty-Humility, such as good social skills and premeditation, are associated with verbal and social bullying (Baughman, Dearing, Giammarco, & Vernon, 2012; Peeters, Cillessen, & Scholte, 2010; Smokowski & Kopasz, 2005; Vaillancourt et al., 2003). These findings suggest that personality factors involving intention to exploit others are associated with the majority, if not all, of the subtypes.

Findings on the other factors of the HEXACO with the subtypes of bullying further demonstrate the significance of the HEXACO. For instance, Farrell and colleagues (2014) found that physical bullying was significantly predicted by low Conscientiousness. Additionally, studies that used the Big Five found physical bullying was associated with impulsivity, a characteristic associated with low Conscientiousness (Connolly & O'Moore, 2003; Pontzer, 2010). Furthermore, racial bullying was significantly predicted by low Emotionality (Farrell et al., 2014), while other studies found associations between this subtype and intolerance for out-groups (Larochette et al., 2010). Overall, these studies suggest in addition to low Honesty-Humility, personality factors in the domains of self-regulation (Conscientiousness) may be associated with physical bullying, while personality factors in the domain of emotional reactivity involving fear (Emotionality) may be associated with racial bullying. Considering the findings on both temperament and personality, it is evident that different subtypes of bullying may be associated with different traits.

Bullying and Environmental Factors (Micro-, Meso-, and Exo- Systems)

In addition to biological dispositions, interactions with surrounding environments can foster bullying behaviors among adolescents. Investigating these environments may demonstrate how adolescents perceive levels of competition for resources, and how this influences their adaptation through bullying behaviors (Hong & Espelage, 2012; Lee, 2011). Furthermore, through interpersonal relationships, adolescents are able to perceive power relations that will indicate what roles and behaviors are expected of them (Bronfenbrenner, 1977; 1979).

Perceptions of Parents. Parents are the primary agents of socialization for adolescents, and also a primary component of the microsystem (Swearer & Doll, 2001). According to Social Learning Theory, individuals learn how to behave based on observing others (Bandura, 1986). Although the majority of bullying occurs in the school setting, parents can impact adolescent bullying through supervising appropriate behaviors and social attitudes, which could carryover to other social domains (Christie-Mizell, Keil, Laske, & Stewart, 2011; Totura et al., 2009). Furthermore, experiences at home with parents set the foundation for adolescents' understandings on the availability of resources in their environment, including the level of support received from others. This may indicate to adolescents how much individual effort will be required to increase access to resources for reproduction in the future (Belsky et al., 1991). The perceptions of parents that will be examined in this study are parental support and parental monitoring.

Parental support includes how much warmth and emotional support parents provide, as well as the expectations and demands placed on their children (Bowes et al., 2009; Swearer & Doll, 2001). Parental monitoring is the amount of effort parents put into

directly asking and paying attention to the activities their children participate in (Georgiou & Stavrinides, 2013). Considering the prominent role of parents in the lives of adolescents, studies on parental support, parental monitoring, and the subtypes of bullying are well-established.

Perceptions of parents and bullying. Previous studies have found that harsh, cold, and a lack of parental support have been associated with bullying as these styles of support may model hostile and aggressive behaviors that adolescents may replicate (Bowes et al., 2009; Georgiou & Stavrinides, 2013; Swearer & Doll, 2001). Furthermore, low parental support may demonstrate that parents expect their children to be physically tough during peer conflicts (Holt, Kantor, & Finkelhor, 2009; Waasdorp, Bradshaw, & Duong, 2011). Adolescents may internalize the lack of support and use bullying as an advantageous method to deal with peers, conflict, and attain resources (Bowes et al., 2009; Espelage & Holt, 2007; Espelage et al., 2012; Swearer & Doll, 2001).

Similar findings exist for parental support and non-physical subtypes of bullying. For instance, parents who humiliate, yell at, or criticize their children were more likely to have children who engaged in direct verbal bullying with their peers (Holt et al., 2009; Swearer & Doll, 2001). Similarly, parents who withdraw warmth and support may demonstrate a power hierarchy and the significance of power assertive strategies to adolescents, which they may use as appropriate methods to manipulate their peers (Swearer & Doll, 2001). In addition, researchers found that a lack of parental support inhibited empathy development in young children, where the children were more likely to engage in social bullying (Curtner-Smith et al., 2006; Poteat, DiGiovanni, & Sheer, 2013). To adolescents, social hierarchies and a lack of empathy may demonstrate that

resources such as warmth and support are unavailable, and therefore they could engage in bullying to increase their chances of attaining these resources (Belsky et al., 1991).

Similar to low parental support, low parental monitoring may also encourage adolescents to engage in all subtypes of bullying. The lenient nature of low monitoring suggests parents may tolerate aggressive bullying behaviors at home (Barboza et al., 2009). This demonstrates to adolescents that similar bullying behaviors, whether physical, verbal, or social, are acceptable outside the home, such as in school with their peers. In fact, adolescents with less parental monitoring reported an overall greater legitimacy of antisocial behavior (Dane et al., 2012), which may influence bullying.

Low parental monitoring may also lead to parent unawareness of bullying and peer conflicts that their children are involved in (Dane et al., 2012). For instance, adolescents with greater parental monitoring engaged in greater discussion of peer conflicts and non-aggressive methods of problem solving with their parents (Barboza et al., 2009). Additionally, many adolescents who engaged in bullying perceived their parents as physically and emotionally absent (Christie-Mizell et al., 2011; Dumas, LaFrenier, & Serketich, 1995; Holt et al., 2009; Georgiou & Stavrinides, 2013; Low & Espelage, 2013; Perren & Hornung, 2005). In sum, both low parental support and monitoring may be associated with greater levels of all subtypes of adolescent bullying.

Friendship Quality. As adolescents spend more time away from their parents, they spend greater time within their peer networks in which bully occurs. This makes peers an important component of the adolescent microsystem. Similar to the perceptions of parents, Social Learning Theory applies to the behaviors of peers and may influence adolescents' willingness to participate in bullying (Bandura, 1986; Elsaesser et al., 2013;

Hong & Espelage, 2012). The specific perception of peers that will be investigated in this thesis is friendship quality. Perceptions of friendship quality include how often within a friendship conflict occurs, how much time is spent, the norms for behaviors and attitudes, and how much emotional support is provided and reciprocated (Hong & Espelage, 2012; Totura et al., 2009). Considering bullying occurs within peer relationships, friendship quality has often been studied with bullying subtypes, but resulted in mixed findings.

Friendship quality and bullying. Several studies found that perception of friendship quality was often associated with global bullying. For example, studies found that adolescents who perceived a high friendship quality were less likely to engage in bullying, compared to adolescents who perceived a low friendship quality (Bollmer et al., 2005; Crawford & Manassis, 2011; Woods, Done, & Kalsi, 2009). Furthermore, associations were found between adolescents who viewed hostile friendships and a greater engagement in bullying (Jantzer, Hoover, & Narloch, 2006). These researchers suggested that high friendship quality can provide a blueprint for how to have positive social relationships, conflict resolution, and greater empathy. This may also demonstrate that a friendship is reciprocal and that there is no need for competition and bullying.

On the contrary, friendship quality may work differently for social bullying. High friendship quality in the form of peer networks and social cohesion may be required to effectively carryout social bullying. For instance, Totura and colleagues (2009) explained that peers determine whether a social hierarchy is established. From an evolutionary framework, peers at the top of this hierarchy may have the greatest resources and social power (Hawley, 1999). Aggression from these individuals may be tolerated and replicated as an attempt to show support and prevent becoming their next victim (Kärnä,

Voeten, Poskiparta, & Salmivalli, 2010). Thus, adolescents may interpret cohesion as an indicator of a good friendship quality and conform to the bullying behaviors of friends. For example, studies have found that friends can model either an openness or intolerance of peers, which may encourage bullying towards these peers (Barboza et al., 2009; Elsaesser et al., 2013; Hong & Espelage, 2012). In sum, it is evident that friendship quality may work in multiple ways to encourage the subtypes of bullying.

School Connectedness. One particular setting that adolescents spend a great deal of time in is at school. School climate is considered a component of the mesosystem since it is influenced by interactions between multiple microsystems such as the individual, peers, and teachers, as well as the physical school space (Hong & Espelage, 2012; Koth, Bradshaw, & Leaf, 2008). The specific perception of school climate that I will investigate is school connectedness, which is how much an adolescent feels connected to his or her school physically, socially, and emotionally, such as through finding meaningful relationships, and involvement in school activities. It also includes how connected adolescents perceive their peers and teachers to be with one another. Since the majority of bullying occurs at school (Koth et al., 2008; Totura et al., 2009), many studies have investigated school connectedness, but have found mixed results.

School connectedness and bullying. The majority of studies have found that lower levels of school connectedness were associated with physical bullying (Elsaesser et al., 2013; Hong & Espelage, 2012; Totura et al., 2009). For instance, adolescents who have poor emotional connections with their peers and teachers engaged in more physical bullying than adolescents with greater emotional connections (Bradshaw, Sawyer, & O'Brennan, 2009; Hong & Espelage, 2012; Khoury-Kassabri et al., 2009; Totura et al.,

2009). Considering many school bullying rules and punishments are centered on physical violence, researchers explained that if adolescents feel poor connections, they may be less concerned about breaking school rules (Elsaesser et al., 2013; Hong & Espelage, 2012; Totura et al., 2009). Similarly, if adolescents perceive their peers or school staff to break school rules, they may perceive poor connectedness, and be more likely to engage in physical bullying (Boulton et al., 2009; Elsaesser et al., 2013). Furthermore, low connections may signal low cooperation, and in turn, high competition.

On the contrary, different mechanisms may work behind school connectedness for non-physical subtypes of bullying. Researchers suggest that high levels of social and emotional connections may be required for verbal, social, racial, and sexual subtypes of bullying to be effective (Wang et al., 2010; 2012). This may be because these subtypes may be used by adolescents as strategies to successfully compete against peers to establish social dominance (Koth et al., 2008). However, there is a lack of data on school connectedness and these subtypes, as researchers have often focused on social connectedness as opposed to school connectedness. In sum, it is evident that similar to friendship quality, school connectedness may work in multiple ways to foster bullying.

Socio-Economic Status (SES). Socio-economic status (SES) is a wider environment classified under the exosystem in which adolescents, their homes, and their schools are all embedded. Consequently, SES may directly and indirectly influence adolescent microsystems and mesosystems (Hong & Espelage, 2012). Previous studies have often researched SES and negative outcomes as whole and found that low SES was associated with a higher exposure to stress (Bettencourt & Farrell, 2013; Hong & Espelage, 2012; Singh & Ghandour, 2012). As a result of the lack of institutional, social,

and recreational resources available in low SES communities, researchers suggest that stress may be dealt with in the form of physical violence (Singh & Ghandour, 2012). Similar mechanisms may work behind SES and bullying.

Socio-economic status and bullying. Several studies found that low SES was associated with higher rates of global bullying among adolescents (Hong & Espelage, 2012; Kim, Boyce, Koh, & Leventhal, 2009; Singh & Ghandour, 2012). This may be attributed to greater modeling of aggression and bullying behaviors in low SES communities, which can demonstrate that these behaviors are advantageous methods of dealing with stressors (Hong & Espelage, 2012; Singh & Ghandour, 2012). However, a meta-analysis by Tippett and Wolke (2014) found bullies were only slightly less likely to come from high SES than low SES backgrounds, and while this association was significant, it was weak. The researchers suggested this may be due, in part, to the fact they primarily looked at global bullying, but ends of the SES continuum may be associated with different subtypes of bullying. In fact, several studies support this idea. For instance, Khoury-Kassabri and colleagues (2004) found that lower SES was associated with physical and verbal bullying, while higher SES was associated with social bullying. The researchers explained that adolescents from low SES backgrounds may be less sensitive to and have a greater tolerance for physically or overtly aggressive behaviors that are more predominant in their neighbourhoods. Additionally, schools in high SES communities may have more formal rules on overt subtypes of bullying, and therefore may be more likely to punish these subtypes in comparison to covert social bullying. It is also possible that adolescents from high SES backgrounds may have additional material resources to engage in these subtypes (Barboza et al., 2009).

This concept is further supported by Kim and colleagues (2009) who found that low SES was a risk factor for bullying among male adolescents. However, high maternal education, which can be used as an indicator of SES, was also a risk factor for bullying among males. Although the specific bullying behaviors were not investigated in this study, the finding that both low and high SES was a risk factor for bullying may suggest that different ends of the SES spectrum may be a risk for different subtypes of bullying.

Current Study

Considering this review, it is evident that a lack of studies has simultaneously researched both individual and environmental factors associated with the five subtypes of bullying inspired from an evolutionary ecological framework. Therefore, I am proposing to investigate the two research questions stated earlier (Which individual and environmental factors will significantly predict each of the five subtypes of bullying in a simultaneous analysis?; Will these factors have independent or interactive effects on the subtypes of bullying?). I will first explore independent effects of the microsystem on the subtypes through the individual (sex, age, temperament, personality) and environmental (parental monitoring, parental support, friendship quality) factors. Next, I will explore the mesosystem through school connectedness, and through the interactive effects of the factors in the microsystem. Finally, I will explore the independent effects of the exosystem through the environmental factor of SES.

Hypotheses

I have different hypotheses for the associations between each of the five subtypes of bullying and the individual and environmental factors in the microsystem (see Table 1). Considering the traditional findings, I predict that physical bullying will be associated

with younger males, verbal and social bullying will be associated with older females, and racial and sexual bullying will be associated with older males. For temperament and personality, physical and verbal bullying will be associated with traits in the domains of self-regulation (low Effortful Control, low Conscientiousness) and emotional reactivity involving frustration and anger (high Frustration) due to the possible reactive nature of these subtypes. However, social, racial, and sexual bullying will be associated with traits in emotional reactivity involving fear and anger (low Frustration, low Emotionality), genuine social connectedness (low Affiliation), positive affect (high Surgency), and self-regulation (high Effortful Control) as previously found. Additionally, all subtypes will be associated with low Honesty-Humility, considering previous findings that demonstrate bullying is associated with a willingness to selectively exploit others, beyond general aggression (e.g., Book et al., 2012).

For the environmental factors in the microsystem, as traditionally found, both perceived low parental support and low parental monitoring will be associated with all subtypes of bullying. As previously found, perceived low friendship quality and school connectedness will be associated with physical bullying. However, perceived high levels of friendship quality and school connectedness will be associated with verbal, social, racial, and sexual bullying since these subtypes may heavily rely on social and emotional connections (whether genuine or not). Additionally for the mesosystem, I predict that individual and environmental factors will interact through moderation relationships to predict the subtypes of bullying. One interactive effect I predict for individual factors is between temperament and personality. Considering temperament may develop during infancy while personality may become more complex during adolescence, temperament

may be moderated by emerging personality traits. One interactive effect I predict for environmental factors is between school connectedness and friendship quality. Considering school connectedness includes connectedness with peers, low connectedness may result in bullying, depending on the level of friendship quality. Finally in the exosystem, perceived low SES will be associated with physical and verbal bullying, while high SES will be associated with social, racial, and sexual bullying, considering the different norms on aggression in communities of differing socio-economic statuses.

Table 1

Predicted Independent Effects of Individual and Environmental Factors for Each Subtype of Bullying

	Subtype of Bullying				
Variables	Physical	Verbal	Social	Racial	Sexual
Age	Younger	Older	Older	Older	Older
Sex	Male	Female	Female	Male	Male
H	Negative	Negative	Negative	Negative	Negative
E			Negative	Negative	Negative
X					
A					
C	Negative	Negative			
O					
Frus	Positive	Positive	Negative	Negative	Negative
Affil			Negative	Negative	Negative
EC	Negative	Negative	Positive	Positive	Positive
Surg			Positive	Positive	Positive
Mon	Negative	Negative	Negative	Negative	Negative
Supp	Negative	Negative	Negative	Negative	Negative
FQ	Negative	Positive	Positive	Positive	Positive
School	Negative	Positive	Positive	Positive	Positive
SES	Negative	Negative	Positive	Positive	Positive

Note. H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, Frus = Frustration, Affil = Affiliation, EC = Effortful Control, Surg = Surgency, Mon = Parental Monitoring, Supp = Parental Support, FQ = Friendship Quality, School = School Connectedness; Blank cells indicate no significant relationship was hypothesized.

Method

Participants

The participants were from a larger study exploring adolescent relationships. The sample included 225 adolescents comprised of 121 boys (53.8%) and 104 girls (46.2%) between the ages of 11 and 17 (M = 14.05, SD = 1.54). The sample was predominately White (43.1%), with a minority of Asian (3.6%) and Black (2.2%) ethnicities. For SES, the majority of participants reported his or her family to be about the same in richness compared to the average Canadian (69.3%), while fewer participants reported his or her family to be more rich (17.6%) and less rich (11.3%). Participants were recruited from extracurricular clubs, sports teams, and youth organizations in Southern Ontario.

Measures

Participants completed a questionnaire on demographic variables (Appendix A) including age, sex, and ethnicity, followed by questionnaires on bullying, individual factors, and environmental factors.

Bullying. Adolescents filled out a bullying questionnaire consisting of five items, one for each subtype, on the frequency of their involvement as a bully in the last school term (α = .82; Volk & Lagzdins, 2009). The item for physical bullying was, "In school, how often have you hit, slapped, or pushed someone much weaker or less popular last term?" See Appendix B for the remaining four items. Questions were rated on a 5-point scale (1 = *that hasn't happened* and 5 = *several times a week*).

Individual Factors.

Temperament. Participants completed a modified version of Rothbart's Early Adolescent Temperament Questionnaire Revised (EATQ-R; Appendix C; Capaldi &

Rothbart, 1992; Ellis & Rothbart, 2001). This scale was the short form of the scale comprised of 44 items, which has a correlation of .94 or greater with the long form of the scale. Four broad factor-level scales with subscales were calculated using the typical scoring methods used by Ellis and Rothbart (2001). The Surgency dimension was comprised of 16 items from the subscales for Surgency (α = .71; e.g., "I think it would be exciting to move to a new city."), reverse coded Fear (α = .65; e.g., "I get frightened riding with a person who likes to speed."), and reverse coded Shyness (α = .82; e.g., "I feel shy about meeting new people."). The Affiliation dimension was comprised of five items (α = .75; e.g., "I want to be able to share my private thoughts with someone else."). The Frustration dimension was comprised of seven items (α = .70; e.g., "I get irritated when I have to stop doing something that I am enjoying."). The Effortful Control dimension was comprised of 16 items from the subscales for Activation Control (α = .76; e.g., "I finish my homework before the due date."), Inhibition Control (α = .69; e.g., "It's easy for me to keep a secret."), and Attention (α = .67; e.g., "I pay close attention when someone tells me how to do something."). Items were rated on a 5-point scale (1 = *almost always untrue* to 5 = *almost always true*).

Personality. Participants completed the self-report of the 100-item HEXACO Personality Inventory-Revised (HEXACO PI-R; Appendix D; Lee & Ashton, 2004). The scale was comprised of six broad factor-level scales. Each factor consisted of 16 items and was computed using typical scoring procedures used by Lee and Ashton (2004), which uses 96 out of the 100 items. Sample items include: "I would never accept a bribe, even if it were very large," for Honesty-Humility (α = .83), "I get very anxious when waiting to hear about an important decision," for Emotionality (α = .84), "In social

situations, I'm usually the one who makes the first move," for Extraversion (α = .85), "My attitude toward people who have treated me badly is 'forgive and forget'," for Agreeableness (α = .84), "I plan ahead and organize things, to avoid scrambling at the last minute," for Conscientiousness (α = .82), and "I like people who have unconventional views," for Openness to Experience (α = .81). Items were rated on a 5-point scale (1 = *strongly disagree* to 5 = *strongly agree*).

Environmental Factors.

Perceptions of parents.

Parental support. Participants completed a modified version of The Social Support Behaviors (SS-B) Scale (Appendix E; Vaux, Riedel, & Stewart, 1987). The original scale is comprised of 45 items, but for the purpose of my thesis, 40 items were used asking questions based on previous experience, how the participant's parents would help out in each of the specific ways outlined in the items. Each item was rated twice; once for each adolescent's mother (α = .98) and once for his or her father (α = .98). The original questionnaire is comprised of five subscales (Emotional Support, Socializing, Practical Assistance, Financial Assistance, and Advice/Guidance). However, for my thesis, I combined all subscales for a global measure of parental support for each parent using typical scoring methods. Furthermore, in order to reduce the number of independent variables, if a participant completed the measure for each parent, an average score was computed, while if a participant completed a measure for one parent, the single score was used. A sample item includes, "Would joke around or suggest doing something to cheer me up." Each item was rated on a 4-point scale (1 = *they would not do this* and 4 = *they would certainly do this*).

Parental monitoring. Participants completed a modified version of the Strictness-Supervision subscale of the Authoritative Parenting Scale asking how often each parent engages in monitoring and limit-setting behaviors (Appendix F; Gray & Steinberg, 1999). The original scale is comprised of nine items. For my thesis, three of the items were used. Each item was rated twice; once for each adolescent's mother ($\alpha = .83$) and once for his or her father ($\alpha = .89$). A final score was computed for each parent using typical scoring methods. However, for the purpose of my thesis, in order to reduce the number of independent variables, if a participant completed the measure for each parent, an average score was computed. However, if a participant completed a measure for one parent, the single score was used. A sample item about the participant's mother includes, "How much does your mother ask you about where you go at night?" Each item was rated on a 4-point scale (1 = *she/he never asks* and 4 = *he/she always asks*).

Friendship quality. Participants filled out a modified version of the Friendship Quality Questionnaire (FFQ; Appendix G; Parker & Asher, 1993). The original measure consists of 41 items, but for the purpose of my thesis, 21 items was used asking how true each statement was about the friendship with their best friend ($\alpha = .82$). The original questionnaire is comprised of six subscales (Validation and Caring, Conflict Resolution, Conflict and Betrayal, Help and Guidance, Companionship and Recreation, Intimate Exchange). However, for the purpose of my thesis, I combined all subscales for a global measure of friendship quality using typical computing methods. A sample item includes, "(Name of friend) and I make each other feel important and special." Each item was rated on a 5-point scale (1 = *not at all true* and 5 = *really true*).

School connectedness. Participants completed the Piers-Harris Children's Self-Concept Scale 2nd Edition, but for the purpose of my thesis, I only used the Intellectual and School Status subscale (Piers & Herzberg, 2002). This subscale consisted of 16 items asking about involvement and connectedness to school and academic competence (α = .75). This subscale was computed using typical scoring methods for this measure. A sample item includes, "I am an important member of my class." Each item was rated as "yes" or "no" based on how much each item applied to the participant.

Socio-economic status (SES). Participants filled out their SES on the demographics questionnaire by answering the question, "Compared to the average Canadian, do you think your family is:" where they rated on a 5-point scale (1 = *a lot less rich* and 5 = *a lot more rich*; Appendix A).

Procedure

After all methods were approved from the Brock University Ethics Board, extracurricular clubs were contacted (Appendix H). Written consent was obtained from club supervisors to allow for researchers to approach adolescents for recruitment (Appendix I). During recruitment, adolescents were told that the study was about adolescent peer relationships in order to reduce bias. Adolescents interested in participating were provided with two envelopes; the first for parent information sheets and consent forms (Appendix J), and the second for adolescent assent forms and questionnaires (Appendix K). Participants were notified that both the parent consent and adolescent assent forms needed to be signed and returned in order for completed questionnaires to be used for analyses in the study. Participants were also told to complete the questionnaires in private. Approximately one week later, completed consent

forms, assent forms, and questionnaires were collected from the adolescents at the extracurricular club. Participants were fully debriefed on the true nature of the study and were given a second assent form to indicate their knowledge of the incomplete disclosure (Appendix L). Finally, participants received $10 in compensation. All collected data were stored in a locked filing cabinet, with access by researchers involved with the study.

Results

Data Analyses

Statistical analyses were conducted using SPSS software. First, univariate and multivariate assumptions were explored. Next, in order to address the first research question, a hierarchical logistic regression was conducted for each subtype of bullying. Regressions were conducted with the raw and standardized continuous predictors, in order to preserve the original data, but also allow for consistency of interpretation among all continuous variables. In the first step, sex and age were entered. In the second and third steps, personality and temperament variables were entered, respectively. In the final step, environmental factors were entered. Variables were entered hierarchically to see whether predictors changed with the addition of other factors, and how much variance each factor contributed to the model. In order to address the second research question, two moderation effects (one for an individual factor, one for an environmental factor) were investigated through exploratory logistic regressions. In one step, the independent variable and moderator were entered as separate variables, followed by a variable that multiplied the independent variable and moderator to represent the interaction (Jaccard, 2001). Once regressions were completed, the significant predictors were compared.

Preliminary Analyses

Univariate Assumptions. Examination of the five subtypes of bullying revealed that three participants did not complete all questions on the subtypes, reducing the sample size to 222. Next, all independent and dependent variables were screened for univariate assumptions of normality including plausible means, standard deviations, skewness, kurtosis, outliers, and missing values. All independent variables, except for Frustration

and school connectedness met these assumptions. Box plots revealed that both Frustration and school connectedness had one and three outliers, respectively, with *z* values greater than |3.00| (Park, 2013). Outliers were not significantly different from non-outliers in age as demonstrated through *t*-tests (all $p < .05$). Outliers were also not significantly different from non-outliers in ethnicity or SES as demonstrated through chi-square tests (all $p < .05$). Square root, log, and inverse transformations were conducted on these variables, but were not used because while the transformations improved skewness and kurtosis values, they created additional outliers. Therefore, in order to reduce the impact of the outliers for both variables, the outliers were replaced with a value that was one raw score greater (or lower) than the next extreme raw score below the *z* score cut off of |3.00| (Thompson, 2008). This reduced the skewness and kurtosis values for both Frustration and school connectedness to the typical cut off of below |3.00| (Tabachnick & Fidell, 2007; Thompson, 2008).

Several other independent variables had outliers with *z* scores greater than |3.00| including Emotionality, Extraversion, Agreeableness, Conscientiousness, Affiliation, Effortful Control, Surgency, and parental support. However, box plots demonstrated none of the outliers were three box lengths above or below the hinge, and did not significantly distort the distribution of these variables (Park, 2013). Furthermore, several outliers are expected in large sample sizes. Therefore, the original scores for these variables were kept. Finally, a Shapiro-Wilks test revealed assumptions of normality were met for Honesty-Humility, Emotionality, Conscientiousness, Openness, Frustration, and Effortful Control (all $p > .05$). However, Shapiro Wilks was violated for all other independent variables (all $p < .05$), and therefore results on these variables should be interpreted with

caution as violations increase the probability of making a Type I error (rejecting the null when the null is true).

Following the assumptions of normality and outliers, missing values were assessed. All independent variables, with the exception of age and parental support, had missing values. Participants with missing values were not significantly different from participants without missing values for all independent variables as demonstrated through *t*-tests (all $p < .05$). Additionally, all participants with missing values were not significantly different in ethnicity or SES as demonstrated through chi-square tests (all $p < .05$). The maximum number of cases missing for a variable in this data set was 15 cases (6.7%) for Openness to Experience. This is slightly above, but close, to the 5% cut off for a mean substitution (Tabachnick & Fidell, 2007), and therefore missing values for all variables were replaced with the mean.

Investigation of the five dependent variables revealed that all five subtypes of bullying were severely positively skewed. This agrees with previous literature as approximately 15% of adolescents engage in bullying (Espelage & Holt, 2007). In order to prevent difficulties with interpretation for transformed dependent variables, I dichotomized the five-point scale of each subtype of bullying into either engaging or not engaging in bullying. Therefore, all subsequent analyses were conducted with dichotomized subtypes of bullying. Furthermore, because SES was not evenly distributed between the five groups, with only two cases in the low and high ends of the groups, SES was recoded into three groups; less rich ($n = 27$, 12.4%), about the same ($n = 152$, 69.7%), and more rich ($n = 39$, 17.9%).

Multivariate Assumptions. The multivariate assumptions for a logistic regression, including linearity between independent variables, outliers, and multicollinearity were examined. Scatterplot matrices demonstrated that all independent variables had linear relationships with one another. Cook's measure of difference using a criterion of 1.00, Leverage with a criterion of .081, and standardized residuals with a criterion of |3.00| revealed three multivariate outliers (Field, 2009). Regressions run with and without outliers did not demonstrate significant differences as similar trends were found for both sets of regressions, and therefore all outliers were kept. See Table 2 for means and standard deviations for all variables after dealing with outliers and missing values. The two categorical variables, sex and SES, met the assumption of having at least 5% of cases within each category. In addition, all dependent variables met the required minimum of 15% of cases within each group (see Table 3 for frequencies for each subtype of bullying). Finally, zero-order correlations for all variables revealed no issues with multicollinearity between independent variables as all correlations were less than .70 (see Table 4; Field, 2009; Kline, 2011; Tabachnick & Fidell, 2007).

Independence of Subtypes. In order to determine the independence of each subtype of bullying, phi-coefficients were conducted between the five dichotomized subtypes, as seen in the box in Table 4. The coefficients between all subtypes were significant and ranged from small to medium in size. The largest coefficient was between verbal and social bullying, followed by verbal and sexual, then verbal and physical. The smallest coefficient was between racial and social bullying, followed by racial and verbal, then racial and sexual.

Table 2

Means and Standard Deviations for all Continuous Independent Variables (n = 222).

	M (SD)
Age	14.07 (1.54)
Personality	
H	3.22 (.56)
E	3.14 (.58)
X	3.52 (.52)
A	3.06 (.53)
C	3.21 (.54)
O	3.06 (.57)
Temperament	
Frus	3.47 (.64)
Affil	3.72 (.70)
EC	3.34 (.50)
Surg	3.29 (.60)
Perceptions of Parents	
Monitoring	2.61 (.87)
Support	132.95 (21.02)
Friendship Quality	81.94 (11.69)
School Connectedness	9.78 (2.07)

Note. H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, Frus = Frustration, Affil = Affiliation, EC = Effortful Control, Surg = Surgency.

Table 3

Frequencies for Dichotomous Bullying Subtypes (n = 222).

	Frequency (%)	
	Engagement	No Engagement
Subtype		
Physical	48 (21.6)	174 (78.4)
Verbal	55 (24.8)	167 (75.2)
Social	49 (22.1)	173 (77.9)
Racial	35 (15.8)	187 (84.2)
Sexual	41 (18.5)	181 (81.5)

Table 4

Correlations Between All Independent and Dependent Variables (n = 222).

	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1.Age	.04	.05	-.08	.17*	-.13	-.19*	-.11	.05	.17*	.12	-.31**	-.18**	.05	-.21**	.03	-.08	.15*	.24**	.21**	.19**	.32**
2.Sex [a]	-	-.01	.28**	.46**	-.08	-.08	.08	.10	.13	.26**	.08	-.30**	.09	.06	.45**	.11	-.24**	-.17**	.03	-.30**	-.18**
3.SES [b]		-	-.04	.04	.16*	-.01	.13	.05	.08	.12	.08	-.01	.10	.13	.04	.10	-.06	-.01	.01	-.06	-.01
4.H			-	.25**	-.10	.32**	.17*	.12*	-.06	.20**	.20**	-.17*	-.10	.04	.20**	.05	-.19**	-.32**	-.21**	-.30**	-.24**
5.E				-	-.08	-.02	.05	.19*	.23**	.45**	-.08	-.47**	.07	-.06	.34**	.21**	-.07	-.03	.07	-.25**	.01
6.X					-	.18*	.18**	.16*	.05	.24**	.19**	.41**	.10	.26**	.19**	.22**	-.14*	-.14*	-.08	-.07	-.08
7.A						-	.22**	.03	-.20**	.14*	.27**	.03	-.07	.13	.03	.17*	-.28**	-.32**	-.15*	-.20**	-.11
8.C							-	.23**	.02	.12	.50**	.04	.07	.27**	.10	.23**	-.17**	-.03	-.07	-.19**	-.13*
9.O								-	.06	.25**	.13*	-.10	.05	.07	.19*	.25**	-.01	.04	.07	-.11	-.01
10.Frus									-	.27**	-.17*	-.24**	.17*	.13	.15*	.12	.02	.01	.12*	-.06	.02
11.Affil										-	.18*	-.04	.11	.12	.41**	.17**	-.07	-.10	.04	-.21**	-.05
12.EC											-	.18**	.10	.32**	.20**	.19**	-.21**	-.17**	-.20**	-.23**	-.22**
13.Surg												-	-.02	.11	-.02	-.14	-.03	.02	.01	.12	-.05
14.Mon													-	.24**	.15*	.15*	-.05	.01	-.01	-.01	.03
15.Supp														-	.24**	.22**	-.22**	-.09	-.14*	-.16*	-.15*
16.FQ															-	.26**	-.02	-.07	.03	-.22**	-.14*
17.Sch																-	-.06	.01	.05	-.14*	.01
18.Phys																	-	.43**	.30**	.34**	.34**
19.Verb																		-	.48**	.24**	.45**
20.Soc																			-	.22**	.33**
21.Rac																				-	.27**
22.Sexu																					-

Note. H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, Frus = Frustration, Affil = Affiliation, EC = Effortful Control, Surg = Surgency, Mon = Parental Monitoring, Supp = Parental Support, FQ = Friendship Quality, Sch = School Connectedness, Phys = Physical Bullying, Verb = Verbal Bullying, Soc = Social Bullying, Rac = Racial Bullying, Sexu = Sexual Bullying; All subtypes coded with 0 = no engagement in bullying, 1 = engagement in bullying.

[a] Sex was coded with 1 = male, 2 = female.

[b] SES coded with 1 = less rich, 2 = about the same, 3 = more rich.

* $p < .05$. ** $p < .01$.

Independent Effects

As predicted for the first research question, each subtype of bullying was predicted by a unique combination of factors. In order to preserve the original data, numbers reported in all tables are from raw scales. However, a column of standardized odds ratios was added for tables on logistic regressions for consistent interpretation of continuous predictors. Thus, odds ratios for these predictors will be interpreted based on the odds of bullying for every standardized unit increase or decrease from the mean.

Physical Bullying. The addition of sex and age in the first step revealed a good model fit for physical bullying as indicated through Homer and Lemeshow's test, $X^2(7) = 6.68$, $p = .462$, Cox and Snell $R^2 = .08$, Nagelkerke $R^2 = .13$. Comparison of log-likelihood ratios for models with and without sex and age showed statistically significant improvement with the addition of these factors $X^2(2) = 19.68$, $p < .001$. Overall classification remained at 78.4% with the addition of sex and age. Correction classification rates also remained the same at 100% for adolescents who did not engage in physical bullying and 0% for adolescents who engaged in physical bullying. Being older and being a male resulted in a greater likelihood for engaging in physical bullying by approximately 1.5 and four times, respectively (see Table 5).

A significant difference in the model was revealed after the addition of the personality factors in the second step as indicated through Homer and Lemeshow's test, $X^2(8) = 4.24$, $p = .835$, Cox and Snell $R^2 = .17$, Nagelkerke $R^2 = .27$. Comparison of log-likelihood ratios for models with and without the personality factors showed statistically significant improvement with the addition of these factors $X^2(6) = 22.74$, $p = .001$. Overall classification improved to 81.1% with the addition of personality. Correction

classification rates reduced to 96.0% for adolescents who did not engage in physical bullying and increased to 27.1% for adolescents who engaged in physical bullying. Being a male increased the likelihood of engaging in physical bullying by almost six times, while being low in Agreeableness increased the likelihood by 1.85 times.

The model was significant after addition of the temperament traits in the third step as indicated through Homer and Lemeshow's test, $X^2(8) = 3.61$, $p = .890$, Cox and Snell $R^2 = .19$, Nagelkerke $R^2 = .29$. However, comparison of log-likelihood ratios for models with and without the temperament traits showed no statistically significant improvement with the addition of these factors $X^2(4) = 3.27$, $p = .513$. Overall classification reduced to 79.7% with the addition of temperament. Correction classification rates reduced to 94.8% for adolescents who did not engage in physical bullying and reduced to 25.0% for adolescents who engaged in physical bullying. Being a male increased the likelihood of engaging in physical bullying by 6.33 times, while being low in Agreeableness increased the likelihood of engaging in physical bullying by 1.89 times.

The model was significant after the addition of the environmental factors in the fourth step as indicated through Homer and Lemeshow's test, $X^2(8) = 3.52$, $p = .897$, Cox and Snell $R^2 = .24$, Nagelkerke $R^2 = .36$. Comparison of log-likelihood ratios for models with and without the environmental factors showed statistically significant improvement with the addition of these factors $X^2(6) = 14.14$, $p = .028$. Overall classification improved to 81.1% with the addition of the environmental factors. Correction classification rates reduced to 93.7% for adolescents who did not engage in physical bullying and reduced to 35.4% for adolescents who engaged in physical bullying. As expected, being a male and low parental support increased the likelihood of engaging in physical bullying by almost

Table 5

Hierarchical Logistic Regression Analysis of Adolescent Physical Bullying as a Function of Individual and Environmental Factors (n =222).

Predictors	Nagelkerke R^2	*ß (SE)*	*Wald X^2 test*	*Odds Ratio*	*Standardized Odds Ratio*	*95% Confidence Interval for Odds Ratio*	
						Lower	*Upper*
Step 1	.13**						
Age		0.42 (0.11)*	5.74*	1.31*	1.52*	1.05*	1.64*
Sex [a]		1.38 (0.38)**	13.02**	3.99**	3.99**	1.88**	8.45**
(Constant)		-6.03 (1.70)	12.64				
Step 2	.27**						
Age		0.14 (0.12)	1.21	1.14	1.23	0.90	1.46
Sex [a]		1.75 (0.47)**	13.73**	5.74**	5.74**	2.28**	14.47**
H		-0.30 (0.38)	0.63	0.74	0.84	0.34	1.56
E		0.30 (0.38)	0.61	1.35	1.19	0.64	2.84
X		-0.65 (0.36)	3.33	0.52	0.71	0.26	1.05
A		-1.17 (0.39)**	8.88**	0.31**	0.54**	0.14**	0.67**
C		-0.46 (0.35)	1.67	0.63	0.78	0.31	1.27
O		0.35 (0.35)	0.98	1.42	1.22	0.71	2.83
(Constant)		1.81 (2.89)	0.39				
Step 3	.29						
Age		0.08 (0.13)	0.36	1.08	1.13	0.84	1.39
Sex [a]		1.85 (0.49)**	14.19**	6.33**	6.33**	2.42**	16.55**
H		-0.36 (0.38)	0.83	0.70	0.82	0.32	1.51
E		-0.05 (0.47)	0.01	0.95	0.97	0.38	2.37
X		-0.65 (0.40)	2.63	0.52	0.72	0.24	1.14
A		-1.22 (0.40)**	9.31**	0.30**	0.53**	0.13**	0.65**
C		-0.21 (0.41)	0.25	0.81	0.89	0.36	1.82
O		0.28 (0.36)	0.63	1.33	1.18	0.66	2.68
Frus		-0.25 (0.33)	0.55	0.78	0.85	0.41	1.50
Affil		0.46 (0.35)	1.74	1.58	1.38	0.80	3.15
EC		-0.68 (0.53)	1.67	0.51	0.71	0.18	1.42
Surg		-0.36 (0.41)	0.79	0.69	0.80	0.31	1.55
(Constant)		5.92 (3.91)	2.29				
Step 4	.36*						
Age		0.05 (0.14)	0.11	1.05	1.08	0.79	1.39
Sex [a]		2.48 (0.57)**	18.68**	11.96**	11.96**	3.88**	36.84**
H		-0.67 (0.44)	2.32	0.51	0.69	0.22	1.21
E		-0.43 (0.52)	0.68	0.65	0.78	0.23	1.81
X		-0.59 (0.43)	1.91	0.55	0.74	0.24	1.28
A		-1.37 (0.43)**	10.14**	0.25**	0.49**	0.11**	0.59**
C		0.13 (0.44)	0.09	1.14	1.07	0.48	2.72
O		0.08 (0.39)	0.04	1.08	1.05	0.50	2.32
Frus		-0.31 (0.36)	0.75	0.73	0.82	0.36	1.48
Affil		0.52 (0.38)	1.82	1.68	1.44	0.79	2.57
EC		-0.73 (0.55)	1.76	0.48	0.69	0.16	1.41
Surg		-0.70 (0.45)	2.46	0.49	0.66	0.20	1.19
Mon		-0.13 (0.24)	0.27	0.88	0.90	0.55	1.41
Supp		-0.02 (0.01)*	5.48*	0.97**	0.59**	0.96**	1.00**
FQ		0.07 (0.02)**	8.30**	1.07**	2.20**	1.02**	1.12**
School		-0.03 (0.10)	0.08	0.97	0.94	0.79	1.18
SES [b]							
SES (1)		0.55 (0.81)	0.47	1.74	1.74	0.36	8.43
SES (2)		0.47 (0.57)	0.67	1.60	1.60	0.52	4.92
(Constant)		7.07 (4.36)	2.63				

Note. H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, Frus = Frustration, Affil = Affiliation, EC = Effortful Control, Surg = Surgency, Mon = Parental Monitoring, Supp = Parental Support, FQ = Friendship Quality, School = School Connectedness.

[a] Sex was coded with 0 = female, 1 = male.

[b] SES was coded with 1 = less rich, 2 = about the same.

* $p < .05$. ** $p < .01$.

12, and 1.69 times, respectively. Contrary to hypotheses, low Agreeableness increased the likelihood of engaging in physical bullying by slightly over two times. Finally, while an association with friendship quality was hypothesized, it was in the opposite direction than expected, where high friendship quality increased the likelihood of engaging in physical bullying by slightly over two times.

Verbal Bullying. The addition of sex and age in the first step did not reveal a good model fit for verbal bullying as indicated through the significant Homer and Lemeshow's test, $X^2(8) = 21.13$, $p = .007$, Cox and Snell $R^2 = .09$, Nagelkerke $R^2 = .13$. However, comparison of log-likelihood ratios for models with and without sex and age showed statistically significant improvement with the addition of these factors, $X^2(2) = 20.92$, $p < .001$. Overall classification increased from 75.2% to 76.6% with the addition of sex and age. Correction classification rates also reduced from 100% to 98.8% for adolescents who did not engage in verbal bullying and improved from 0% to 9.1% for adolescents who engaged in verbal bullying. Being older and being a male resulted in a greater likelihood for engaging in verbal bullying by approximately 1.85, and 2.63 times, respectively (see Table 6).

A significant difference in the model was revealed after the addition of the personality factors in the second step as indicated through Homer and Lemeshow's test, $X^2(8) = 2.88$, $p = .942$, Cox and Snell $R^2 = .23$, Nagelkerke $R^2 = .35$. Comparison of log-likelihood ratios for models with and without the personality factors showed statistically significant improvement with the addition of these factors $X^2(6) = 37.95$, $p < .001$. Overall classification improved to 78.8% with the addition of personality. Correction classification rates reduced to 94% for adolescents who did not engage in verbal bullying

and increased to 32.7% for adolescents who engaged in verbal bullying. Being older and being a male increased the likelihood of engaging in verbal bullying by 1.52, and 3.56 times, respectively. Low Honesty-Humility, Extraversion, and Agreeableness increased the likelihood of verbal bullying by 2.08, 1.59, and 1.92 times, respectively.

The model was significant after the addition of the temperament traits in the third step as indicated through Homer and Lemeshow's test, $X^2(8) = 5.11$, $p = .746$, Cox and Snell $R^2 = .24$, Nagelkerke $R^2 = .36$. However, comparison of log-likelihood ratios for models with and without the temperament traits showed no statistically significant improvement with the addition of these factors $X^2(4) = 2.54$, $p = .637$. Overall classification improved slightly to 81.1% with the addition of temperament. Correction classification rates increased slightly to 94.6% for adolescents who did not engage in verbal bullying and increased slightly to 40% for adolescents who engaged in verbal bullying. Being older and being a male significantly increased the likelihood of engaging in verbal bullying by 1.52, and 3.56 times, respectively. Low Honesty-Humility, low Extraversion, and low Agreeableness were also significant predictors, increasing the likelihood, by 2.08, 1.64, and 1.92 times, respectively.

The model was significant after the addition of the environmental factors in the fourth step as indicated through Homer and Lemeshow's test, $X^2(8) = 7.16$, $p = .519$, Cox and Snell $R^2 = .25$, Nagelkerke $R^2 = .38$. However, comparison of log-likelihood ratios for models with and without the environmental factors showed no statistically significant improvement with the addition of these factors $X^2(6) = 3.87$, $p = .694$. Overall classification remained the same at 81.1% with the addition of the environmental factors. Correction classification rates reduced to 94% for adolescents who did not engage in

Table 6

Hierarchical Logistic Regression Analysis of Adolescent Verbal Bullying as a Function of Individual and Environmental Factors (n =222).

Predictors	Nagelkerke R^2	*ß (SE)*	*Wald X^2 test*	*Odds Ratio*	*Standardized Odds Ratio*	*95% Confidence Interval for Odds Ratio*	
						Lower	*Upper*
Step 1	.13**						
Age		0.40 (0.11)**	13.12**	1.49**	1.85**	1.20**	1.85**
Sex [a]		0.96 (0.34)**	7.81**	2.62**	2.63**	2.63**	5.17**
(Constant)		-7.39 (1.65)	19.97				
Step 2	.35**						
Age		0.28 (0.12)*	5.24*	1.32*	1.55*	1.04*	1.70*
Sex [a]		1.29 (0.45)**	8.14**	3.65**	3.65**	1.50**	8.90**
H		-1.30 (0.40)**	9.97**	0.27**	0.48**	0.12**	0.61**
E		0.44 (0.38)	1.24	1.56	1.29	0.71	3.40
X		-0.88 (0.38)*	5.36*	0.41*	0.63*	0.19*	0.87*
A		-1.23 (0.39)**	9.60**	0.29**	0.52**	0.13**	0.64**
C		0.51 (0.35)	2.14	1.66	1.32	0.84	3.29
O		0.45 (0.35)	1.58	1.56	1.29	0.78	3.13
(Constant)		0.45 (2.87)	0.02				
Step 3	.36						
Age		0.27 (0.13)*	4.22*	1.31*	1.52*	1.01*	1.71*
Sex [a]		1.27 (0.46)**	7.46**	3.56**	3.56**	1.43**	8.84**
H		-1.32 (0.42)**	9.72**	0.27**	0.48**	0.12**	0.61**
E		0.59 (0.46)	1.68	1.80	1.41	0.74	4.41
X		-0.96 (0.42)*	5.23*	0.38*	0.61*	0.17*	0.87*
A		-1.24 (0.41)**	9.10**	0.29**	0.52**	0.13**	0.65**
C		0.70 (0.40)	3.00	2.02	1.46	0.91	4.46
O		0.47 (0.36)	1.67	1.60	1.31	0.78	3.26
Frus		-0.36 (0.34)	1.07	0.70	0.80	0.36	1.37
Affil		0.08 (0.34)	0.06	1.08	1.06	0.56	2.10
EC		-0.45 (0.53)	0.73	0.64	0.80	0.23	1.79
Surg		0.32 (0.41)	0.60	1.38	1.21	0.61	3.09
(Constant)		1.18 (3.78)	0.10				
Step 4	.38						
Age		0.32 (0.14)*	5.09*	1.37*	1.63*	1.04*	1.81*
Sex [a]		1.41 (0.50)**	7.92**	4.10**	4.10**	1.53**	10.98**
H		-1.40 (0.45)**	9.84**	0.25**	0.46**	0.10**	0.59**
E		0.43 (0.47)	0.81	1.53	1.28	0.60	3.89
X		-1.08 (0.44)*	6.02*	0.34*	0.57*	0.14*	0.80*
A		-1.31 (0.42)**	9.82**	0.27**	0.50**	0.12**	0.61**
C		0.71 (0.42)	2.87	2.04	1.47	0.89	4.68
O		0.33 (0.38)	0.75	1.39	1.21	0.66	2.95
Frus		-0.44 (0.36)	1.53	0.64	0.75	0.32	1.30
Affil		0.12 (0.35)	0.12	1.13	1.09	0.57	2.24
EC		-0.50 (0.54)	0.85	0.61	0.78	0.21	1.75
Surg		0.29 (0.43)	0.44	1.33	1.19	0.57	3.11
Mon		-0.10 (0.23)	0.19	0.90	0.92	0.58	1.41
Supp		0.00 (0.01)	0.00	1.00	1.00	0.98	1.02
FQ		0.02 (0.02)	0.65	1.02	1.22	0.98	1.06
School		0.15 (0.10)	2.14	1.16	1.36	0.95	1.42
SES [b]							
SES (1)		0.45 (0.71)	0.40	1.56	1.56	0.39	6.29
SES (2)		0.15 (0.53)	0.08	1.16	1.16	0.41	3.27
(Constant)		-0.05 (4.09)	0.00				

Note. H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientious1.29ness, O = Openness to Experience, Frus = Frustration, Affil = Affiliation, EC = Effortful Control, Surg = Surgency, Mon = Parental 0.63Monitoring, Supp = Parental Support, FQ = Friendship Quality, School = School Connectedness.

[a] Sex was coded with 0 = female, 1 = male.

[b] SES was coded with 1 = less rich, 2 = about the same.

* $p < .05$. ** $p < .01$.

verbal bullying and slightly increased to 41.8% for adolescents who engaged in verbal bullying. As expected, being older and low Honesty-Humility increased the likelihood of engaging in verbal bullying by almost 1.63 and 2.17 times, respectively. Contrary to hypotheses, being a male increased the likelihood by 4.10 times, while being low in Extraversion, and Agreeableness increased the likelihood by 1.75 and two times, respectively. Also different from predictions, no temperament traits or environmental factors significantly increased the likelihood of engaging in verbal bullying.

Social Bullying. The addition of sex and age in the first step revealed a good model fit for social bullying as indicated through Homer and Lemeshow's test, $X^2(8) = 8.12$, $p = .422$, Cox and Snell $R^2 = .05$, Nagelkerke $R^2 = .07$. Comparison of log-likelihood ratios for models with and without sex and age showed statistically significant improvement with the addition of these factors $X^2(2) = 10.38$, $p = .006$. Overall classification remained the same at 77.9% with the addition of sex and age. Correction classification rates also remained at 100% for adolescents who did not engage in social bullying and 0% for adolescents who engaged in social bullying. Being older resulted in a greater likelihood for engaging in social bullying by 1.69 times (see Table 7).

A significant difference in the model was revealed after the addition of the personality factors in the second step as indicated through Homer and Lemeshow's test, $X^2(8) = 6.95$, $p = .542$, Cox and Snell $R^2 = .11$, Nagelkerke $R^2 = .16$. Comparison of log-likelihood ratios for models with and without the personality factors showed statistically significant improvement with the addition of these factors $X^2(6) = 14.71$, $p = .023$. Overall classification improved to 78.8% with the addition of personality. Correction classification rates reduced to 96.5% for adolescents who did not engage in social

bullying and increased to 16.3% for adolescents who engaged in social bullying. Being older and having low Honesty-Humility increased the likelihood of engaging in social bullying by 1.48, and 1.89 times, respectively.

The model was significant after the addition of the temperament traits in the third step as indicated through Homer and Lemeshow's test, $X^2(8) = 4.21$, $p = .838$, Cox and Snell $R^2 = .14$, Nagelkerke $R^2 = .21$. However, comparison of log-likelihood ratios for models with and without the temperament traits showed no statistically significant improvement with the addition of these factors $X^2(4) = 7.82$, $p = .098$. Overall classification improved slightly to 80.2% with the addition of temperament. Correction classification rates increased slightly to 97.1% for adolescents who did not engage in social bullying and increased to 20.4% for adolescents who engaged in social bullying. Low Honesty-Humility and low Extraversion significantly increased the likelihood of engaging in social bullying by 1.85, and 1.56 times, respectively.

The model was significant after the addition of the environmental factors in the fourth step as indicated through Homer and Lemeshow's test, $X^2(8) = 5.41$, $p = .713$, Cox and Snell $R^2 = .15$, Nagelkerke $R^2 = .24$. However, comparison of log-likelihood ratios for models with and without the environmental factors showed no statistically significant improvement with the addition of these factors $X^2(6) = 4.47$, $p = .613$. Overall classification reduced to 79.7% with the addition of the environmental factors. Correction classification rates reduced to 95.4% for adolescents who did not engage in social bullying and increased slightly to 24.5% for adolescents who engaged in social bullying. As expected, low Honesty-Humility increased the likelihood of social bullying by 1.92 times. Contrary to hypotheses, low Extraversion increased the likelihood by 1.64 times.

Table 7

Hierarchical Logistic Regression Analysis of Adolescent Social Bullying as a Function of Individual and Environmental Factors (n =222).

Predictors	Nagelkerke R^2	*ß (SE)*	*Wald X^2 test*	*Odds Ratio*	*Standardized Odds Ratio*	*95% Confidence Interval for Odds Ratio*	
						Lower	*Upper*
Step 1	.07**						
Age		0.34 (0.11)**	9.71**	1.40**	1.69**	1.13**	1.74**
Sex [a]		-0.11 (0.33)	0.11	0.90	0.90	0.47	1.72
(Constant)		-6.05 (1.60)	14.21				
Step 2	.16*						
Age		0.25 (0.11)*	4.78*	1.29*	1.48*	1.02*	1.61*
Sex [a]		-0.22 (0.41)	0.30	0.80	0.80	0.36	1.78
H		-1.13 (0.37)**	9.18**	0.32**	0.53**	0.15**	0.67**
E		0.33 (0.35)	0.86	1.39	1.21	0.69	2.78
X		-0.50 (0.35)	1.99	0.61	0.77	0.30	1.21
A		-0.07 (0.35)	0.04	0.93	0.96	0.46	1.88
C		-1.15 (0.33)	0.20	0.86	0.92	0.45	1.65
O		0.45 (0.33)	1.59	1.57	1.30	0.82	2.98
(Constant)		-1.22 (2.74)	0.20				
Step 3	.21						
Age		0.20 (0.12)	2.81	1.23	1.37	0.97	1.56
Sex [a]		-0.35 (0.42)	0.70	0.71	0.71	0.31	1.60
H		-1.08 (0.38)**	8.08**	0.34**	0.54**	0.16**	0.71**
E		0.40 (0.41)	0.95	1.49	1.26	0.67	3.34
X		-0.87 (0.41)*	4.52*	0.42*	0.64*	0.19*	0.93*
A		0.14 (0.38)	0.14	1.15	1.08	0.55	2.41
C		0.16 (0.39)	0.16	1.17	1.09	0.54	2.54
O		0.54 (0.34)	2.48	1.71	1.36	0.88	3.35
Frus		0.34 (0.30)	1.26	1.41	1.24	0.78	2.55
Affil		0.11 (0.31)	0.12	1.11	1.08	0.60	2.06
EC		-0.85 (0.49)	2.96	0.43	0.65	0.16	1.12
Surg		0.74 (0.40)	3.43	2.10	1.56	0.96	4.63
(Constant)		-2.71 (3.56)	0.58				
Step 4	.24						
Age		0.21 (0.13)	2.73	1.23	1.39	0.96	1.59
Sex [a]		-0.37 (0.45)	0.68	0.69	0.69	0.28	1.67
H		-1.15 (0.40)**	8.29**	0.31**	0.52**	0.14**	0.69**
E		0.24 (0.44)	0.31	1.28	1.15	0.54	3.01
X		-0.95 (0.44)*	4.63*	0.39*	0.61*	0.16*	0.92*
A		0.09 (0.39)	0.06	1.10	1.05	0.52	2.36
C		0.20 (0.41)	0.24	1.22	1.12	0.54	2.76
O		0.42 (0.35)	1.41	1.52	1.27	0.76	3.05
Frus		0.33 (0.32)	1.12	1.40	1.24	0.75	2.59
Affil		0.14 (0.33)	0.18	1.15	1.10	0.60	2.19
EC		-0.84 (0.51)	2.76	0.43	0.65	0.16	1.16
Surg		0.84 (0.44)	3.69	2.31	1.65	0.98	5.44
Mon		-0.12 (0.22)	0.31	0.88	0.90	0.57	1.36
Supp		-0.01 (0.01)	1.32	0.99	0.79	0.97	1.01
FQ		0.01 (0.02)	0.15	1.01	1.10	0.97	1.05
School		0.16 (0.10)	2.60	1.18	1.40	0.97	1.44
SES [b]							
SES (1)		-0.09 (0.69)	0.02	1.02	0.92	0.24	3.56
SES (2)		0.02 (0.49)	0.00	0.10	1.02	0.39	2.67
(Constant)		-2.32 (3.79)	0.38				

Note. H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, Frus = Frustration, Affil = Affiliation, EC = Effortful Control, Surg = Surgency, Mon = Parental Monitoring, Supp = Parental Support, FQ = Friendship Quality, School = School Connectedness.

[a] Sex was coded with 0 = female, 1 = male.

[b] SES was coded with 1 = less rich, 2 = about the same.

* $p < .05$. ** $p < .01$.

Also different from predictions, no temperament traits or environmental factors significantly increased the likelihood of engaging in social bullying.

Racial Bullying. The addition of sex and age in the first step revealed a good model fit for racial bullying as indicated through Homer and Lemeshow's test, $X^2(7) = 3.20$, $p = .865$, Cox and Snell $R^2 = .14$, Nagelkerke $R^2 = .24$. Comparison of log-likelihood ratios for models with and without sex and age showed statistically significant improvement with the addition of these factors $X^2(2) = 33.03$, $p < .001$. Overall classification increased slightly from 84.2% to 84.7% with the addition of sex and age. Correction classification rates reduced from 100% to 98.4 % for adolescents who did not engage in racial bullying and increased from 0% to 11.4% for adolescents who engaged in racial bullying. Being older and being a male resulted in a greater likelihood for engaging in racial bullying by 1.93, and 10.16 times, respectively (see Table 8).

A significant difference in the model was revealed after the addition of the personality factors in the second step as indicated through Homer and Lemeshow's test, $X^2(8) = 3.54$, $p = .896$, Cox and Snell $R^2 = .22$, Nagelkerke $R^2 = .39$. Comparison of log-likelihood ratios for models with and without the personality factors showed statistically significant improvement with the addition of these factors $X^2(6) = 23.56$, $p = .001$. Overall classification improved to 85.1% with the addition of personality. Correction classification rates reduced to 96.8% for adolescents who did not engage in racial bullying and increased to 22.9% for adolescents who engaged in racial bullying. Being older and being a male increased the likelihood of engaging in racial bullying by 1.76, and 7.34 times, respectively. Low Honesty-Humility increased the likelihood of engaging in racial bullying by 1.72 times.

The model was significant after the addition of the temperament traits in the third step as indicated through Homer and Lemeshow's test, $X^2(8) = 4.35$, $p = .825$, Cox and Snell $R^2 = .24$, Nagelkerke $R^2 = .41$. However, comparison of log-likelihood ratios for models with and without the temperament traits showed no statistically significant improvement with the addition of these factors $X^2(4) = 3.44$, $p = .487$. Overall classification reduced to 84.2% with the addition of temperament. Correction classification decreased slightly to 96.3% for adolescents who did not engage in racial bullying and decreased to 20% for adolescents who engaged in racial bullying. Being a male and having low Honesty-Humility significantly increased the likelihood of engaging in racial bullying by 7.67, and 1.78 times, respectively.

The model was significant after the addition of the environmental factors in the fourth step as indicated through Homer and Lemeshow's test, $X^2(8) = 2.59$, $p = .957$, Cox and Snell $R^2 = .25$, Nagelkerke $R^2 = .43$. However, comparison of log-likelihood ratios for models with and without the environmental factors showed no statistically significant improvement with the addition of these factors $X^2(6) = 4.63$, $p = .591$. Overall classification increased to 87.4% with the addition of the environmental factors. Correction classification rates remained the same at 96.3% for adolescents who did not engage in racial bullying and increased to 40% for adolescents who engaged in racial bullying. As expected, being a male significantly increased the likelihood of racial bullying by 8.75 times. Contrary to hypotheses, no other personality, temperament, or environmental factors significantly increased the likelihood of engaging in racial bullying.

Table 8

Hierarchical Logistic Regression Analysis of Adolescent Racial Bullying as a Function of Individual and Environmental Factors (n =222).

Predictors	Nagelkerke R^2	*ß (SE)*	*Wald X^2 test*	*Odds Ratio*	*Standardized Odds Ratio*	*95% Confidence Interval for Odds Ratio*	
						Lower	*Upper*
Step 1	.24**						
Age		0.42 (0.14)**	9.71**	1.53**	1.93**	1.17**	2.00**
Sex [a]		2.31 (0.57)**	16.76**	10.16**	10.16**	3.35**	30.81**
(Constant)		-9.42 (2.12)	19.67				
Step 2	.39**						
Age		0.37 (0.15)*	5.72*	1.44*	1.76*	1.07*	1.95*
Sex [a]		1.99 (0.66)**	9.12**	7.34**	7.34**	2.01**	26.74**
H		-0.96 (0.49)*	3.90*	0.38*	0.58*	0.15*	0.99*
E		-0.92 (0.49)	3.52	0.40	0.59	0.15	1.04
X		-0.42 (0.43)	0.95	0.66	0.81	0.29	1.52
A		-0.78 (0.44)	3.21	0.46	0.66	0.19	1.08
C		-0.46 (0.42)	1.16	0.63	0.78	0.27	1.46
O		-0.37 (0.43)	0.75	0.69	0.81	0.29	1.60
(Constant)		3.61 (3.77)	0.92				
Step 3	.41						
Age		0.31 (0.16)	3.64	1.36	1.61	0.99	1.87
Sex [a]		2.04 (0.70)**	8.51**	7.67**	7.67**	1.95**	30.16**
H		-1.04 (0.50)*	4.25*	0.35*	0.56*	0.13*	0.95*
E		-0.92 (0.59)	2.39	0.40	0.59	0.12	1.28
X		-0.60 (0.49)	1.47	0.55	0.73	0.21	1.44
A		-0.79 (0.45)	3.14	0.45	0.66	0.19	1.09
C		-0.01 (0.50)	0.00	0.99	0.99	0.37	2.63
O		-0.36 (0.45)	0.63	0.70	0.82	0.29	1.69
Frus		-0.35 (0.42)	0.71	0.70	0.80	0.31	1.60
Affil		0.19 (0.42)	0.20	1.21	1.14	0.53	2.76
EC		-1.12 (0.67)	2.77	0.33	0.57	0.09	1.22
Surg		0.31 (0.53)	0.35	1.37	1.20	0.48	3.87
(Constant)		6.70 (5.18)	1.81				
Step 4	.43						
Age		0.29 (0.17)	2.95	1.33	1.56	0.96	1.86
Sex [a]		2.17 (0.75)**	8.32**	8.75**	8.75**	2.00**	38.20**
H		-0.96 (0.55)	3.01	0.38	0.58	0.13	1.13
E		-0.92 (0.65)	2.02	0.40	0.59	0.11	1.42
X		-0.56 (0.52)	1.16	0.57	0.75	0.21	1.58
A		-0.88 (0.46)	3.64	0.41	0.63	0.17	1.02
C		0.03 (0.54)	0.00	1.03	1.01	0.36	2.96
O		-0.38 (0.48)	0.62	0.68	0.80	0.26	1.76
Frus		-0.21 (0.44)	0.22	0.81	0.88	0.34	1.94
Affil		0.32 (0.47)	0.47	1.38	1.25	0.55	3.44
EC		-0.95 (0.69)	1.90	0.38	0.62	0.10	1.50
Surg		0.21 (0.58)	0.12	1.23	1.13	0.39	3.84
Mon		0.03 (0.29)	0.01	1.03	1.02	0.58	1.83
Supp		-0.01 (0.01)	1.09	0.99	0.76	0.96	1.01
FQ		-0.01 (0.03)	0.03	1.00	0.95	0.95	1.05
School		-0.01 (0.12)	2.00	1.00	0.99	0.78	1.27
SES [b]							
SES (1)		0.59 (0.83)	0.51	1.80	1.80	0.36	9.08
SES (2)		-0.52 (0.69)	0.69	0.59	0.59	0.17	2.04
(Constant)		8.08 (5.71)	2.00				

Note. H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, Frus = Frustration, Affil = Affiliation, EC = Effortful Control, Surg = Surgency, Mon = Parental Monitoring, Supp = Parental Support, FQ = Friendship Quality, School = School Connectedness.

[a] Sex was coded with 0 = female, 1 = male.

[b] SES was coded with 1 = less rich, 2 = about the same.

* $p < .05$. ** $p < .01$.

Sexual Bullying. The addition of sex and age in the first step did not reveal a good model fit for sexual bullying as indicated through a significant Homer and Lemeshow's test, $X^2(8) = 16.15$, $p = .040$, Cox and Snell $R^2 = .14$, Nagelkerke $R^2 = .23$. However, comparison of log-likelihood ratios for models with and without sex and age showed statistically significant improvement with the addition of these factors $X^2(2) = 34.57$, $p < .001$. Overall classification increased slightly from 81.5% to 82.9% with the addition of sex and age. Correction classification rates reduced from 100% to 98.9% for adolescents who did not engage in sexual bullying and increased from 0% to 12.2% for adolescents who engaged in sexual bullying. Being older and a male resulted in a greater likelihood for engaging in sexual bullying by 2.70, and 3.63 times, respectively (see Table 9).

A significant difference in the model was revealed after the addition of the personality factors in the second step as indicated through Homer and Lemeshow's test, $X^2(8) = 4.30$, $p = .829$, Cox and Snell $R^2 = .18$, Nagelkerke $R^2 = .29$. Comparison of log-likelihood ratios for models with and without the personality factors did not show statistically significant improvement with the addition of these factors $X^2(6) = 9.64$, $p = .141$. Overall classification improved to 85.1% with the addition of personality. Correction classification rates reduced to 97.2% for adolescents who did not engage in sexual bullying and increased to 31.7% for adolescents who engaged in sexual bullying. Being older and being a male increased the likelihood of engaging in sexual bullying by 2.35, and 3.79 times, respectively. Low Honesty-Humility also increased the likelihood by 1.75 times.

The model was significant after the addition of the temperament traits in the third step as indicated through Homer and Lemeshow's test, $X^2(8) = 10.24$, $p = .249$, Cox and Snell $R^2 = .19$, Nagelkerke $R^2 = .30$. However, comparison of log-likelihood ratios for models with and without the temperament traits showed no statistically significant improvement with the addition of these factors $X^2(4) = 1.50$, $p = .827$. Overall classification increased slightly to 85.6% with the addition of temperament. Correction classification remained the same at 97.2% for adolescents who did not engage in sexual bullying and increased to 34.1% for adolescents who engaged in sexual bullying. Being older and being a male significantly increased the likelihood of engaging in sexual bullying by 2.24, and 3.74 times, respectively. Low Honesty-Humility also increased the likelihood by over 1.78 times.

The model was significant after the addition of the environmental factors in the fourth step as indicated through Homer and Lemeshow's test, $X^2(8) = 6.82$, $p = .556$, Cox and Snell $R^2 = .21$, Nagelkerke $R^2 = .35$. However, comparison of log-likelihood ratios for models with and without the environmental factors showed no statistically significant improvement with the addition of these factors $X^2(6) = 8.15$, $p = .228$. Overall classification decreased to 85.1% with the addition of the environmental factors. Correction classification rates decreased to 96.1% for adolescents who did not engage in sexual bullying and increased slightly to 36.6% for adolescents who engaged in sexual bullying. As expected, being older and being a male significantly increased the likelihood of sexual bullying by almost 2.36, and 3.89 times, respectively. Additionally, low Honesty-Humility significantly increased the likelihood by 1.67 times. Contrary to hypotheses, no temperament or environmental factors significantly increased the

Table 9

Hierarchical Logistic Regression Analysis of Adolescent Sexual Bullying as a Function of Individual and Environmental Factors (n =222).

Predictors	Nagelkerke R^2	*ß (SE)*	*Wald X^2 test*	*Odds Ratio*	*Standardized Odds Ratio*	*95% Confidence Interval for Odds Ratio*	
						Lower	*Upper*
Step 1	.23**						
Age		0.64 (0.14)**	22.46**	1.91**	2.70**	1.46**	2.49**
Sex [a]		1.29 (0.42)**	9.55**	3.63**	3.63**	1.60**	8.22**
(Constant)		-11.63 (2.11)	30.43				
Step 2	.29						
Age		0.55 (0.14)**	15.45**	1.74**	2.35**	1.32**	2.30**
Sex [a]		1.33 (0.49)**	7.26**	3.79**	3.79**	1.44**	9.98**
H		-0.99 (0.42)*	5.59*	0.37*	0.57*	0.16*	0.84*
E		0.59 (0.41)	2.09	1.80	1.41	0.81	3.99
X		-0.47 (0.38)	1.49	0.63	0.78	0.30	1.33
A		0.12 (0.40)	0.10	1.13	1.07	0.52	2.47
C		-0.39 (0.38)	1.03	0.68	0.81	0.32	1.43
O		0.11 (0.38)	0.08	1.11	1.06	0.53	2.34
(Constant)		-6.97 (3.28)	4.52				
Step 3	.30						
Age		0.52 (0.15)**	12.22**	1.69**	2.24**	1.26**	2.26**
Sex [a]		1.32 (0.51)*	6.71*	3.74*	3.74*	1.38*	10.17*
H		-1.01 (0.43)*	5.48*	0.36*	0.56*	0.15*	0.86*
E		0.55 (0.47)	1.37	1.74	1.38	0.69	4.42
X		-0.40 (0.44)	0.83	0.67	0.81	0.28	1.58
A		-0.09 (0.41)	0.05	1.09	1.05	0.49	2.45
C		-0.18 (0.43)	0.17	0.84	0.91	0.36	1.96
O		0.12 (0.38)	0.09	1.12	1.07	0.53	2.39
Frus		-0.30 (0.36)	0.67	0.74	0.83	0.36	1.52
Affil		0.05 (0.35)	0.02	1.05	1.04	0.53	2.08
EC		-0.52 (0.56)	0.88	0.59	0.83	0.20	1.78
Surg		-0.14 (0.43)	0.11	0.87	1.04	0.37	2.03
(Constant)		-4.13 (4.25)	0.94				
Step 4	.35						
Age		0.56 (0.16)**	12.29**	1.75**	2.36**	1.28**	2.39**
Sex [a]		1.36 (0.57)*	5.64*	3.89*	3.89*	1.27*	11.96*
H		-0.92 (0.45)*	4.09*	0.40*	0.60*	0.16*	0.97*
E		0.60 (0.51)	1.37	1.82	1.42	0.67	4.95
X		-0.51 (0.46)	1.24	0.60	0.77	0.24	1.48
A		-0.02 (0.42)	0.00	0.98	0.99	0.43	2.25
C		-0.20 (0.56)	0.18	0.82	0.90	0.33	2.03
O		0.08 (0.41)	0.04	1.08	1.05	0.49	2.41
Frus		-0.27 (0.38)	0.51	0.76	0.84	0.36	1.62
Affil		0.18 (0.37)	0.24	1.20	1.13	0.58	2.46
EC		-0.42 (0.59)	0.51	0.66	0.81	0.21	2.08
Surg		-0.10 (0.46)	0.04	0.91	0.94	0.36	2.26
Mon		0.02 (0.24)	0.01	1.02	1.02	0.63	1.65
Supp		-0.01 (0.01)	0.28	0.99	0.89	0.97	1.01
FQ		-0.02 (0.02)	0.84	0.98	0.77	0.93	1.02
School		0.15 (0.11)	1.79	1.17	1.38	0.93	1.46
SES [b]							
SES (1)		0.45 (0.70)	0.42	1.57	1.57	0.40	6.21
SES (2)		-0.76 (0.53)	2.02	0.47	0.48	0.16	1.33
(Constant)		-3.91 (4.59)	0.73				

Note. H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, Frus = Frustration, Affil = Affiliation, EC = Effortful Control, Surg = Surgency, Mon = Parental Monitoring, Supp = Parental Support, FQ = Friendship Quality, School = School Connectedness.

[a] Sex was coded with 0 = female, 1 = male.

[b] SES was coded with 1 = less rich, 2 = about the same.

* $p < .05$. ** $p < .01$.

likelihood of engaging in sexual bullying. A summary of the predicted and unpredicted independent effects found can be seen in Table 10.

Table 10

Summary of Predicted and Unpredicted Independent Effects Found for Individual and Environmental Factors for Each Subtype of Bullying

	Subtype of Bullying									
Variables	Physical		Verbal		Social		Racial		Sexual	
Age	Younger		Older	✓	Older	✓	Older	✓	Older	✓
Sex	Male	✓	**Male***		Female		Male	✓	Male	✓
H	Negative		Negative	✓	Negative	✓	Negative	✓	Negative	✓
E					Negative		Negative		Negative	
X			**Negative**							
A	**Negative**		**Negative**							
C	Negative		Negative							
O										
Frus	Positive		Positive		Negative		Negative		Negative	
Affil					Negative		Negative		Negative	
EC	Negative		Negative		Positive		Positive		Positive	
Surg					Positive		Positive		Positive	
Mon	Negative		Negative		Negative		Negative		Negative	
Supp	Negative	✓	Negative		Negative		Negative		Negative	
FQ	**Positive***		Negative		Positive		Positive		Positive	
School	Negative		Negative		Positive		Positive		Positive	
SES	Negative		Negative		Positive		Positive		Positive	

Note. H = Honesty-Humility, E = Emotionality, X = Extraversion, A = Agreeableness, C = Conscientiousness, O = Openness to Experience, Frus = Frustration, Affil = Affiliation, EC = Effortful Control, Surg = Surgency, Mon = Parental Monitoring, Supp = Parental Support, FQ = Friendship Quality, School = School Connectedness; Check mark beside non-bolded cell indicates predicted finding; Bolded cell indicates unpredicted finding; Blank cell indicate no significant relationship was predicted or found. *Indicates the prediction was opposite to the finding.

Interactive Effects

As predicted for my second research question, an exploratory logistic regression demonstrated an interaction effect for two subtypes of bullying. However, they were not either of the two hypothesized interactions. Instead, the first regression revealed the association between Extraversion and social bullying was moderated by sex. The regression revealed a good model fit with the addition of the individual factors as indicated through the Omnibus Tests of Model Coefficients, $X^2(3) = 9.57$, $p = .023$, Cox

and Snell R^2 = .04, Nagelkerke R^2 = .06. Overall classification improved from 77.9% without the variables to 78.4% with these variables. Correction classification rates were 98.8% for adolescents who did not engage in social bullying and 6.1% for adolescents who engaged in social bullying. The interaction between Extraversion and sex significantly increased the odds of social bullying by 2.56 times (see Table 10).

In order to determine the direction of the interaction, a split file was used to conduct a zero-order correlation between raw Extraversion and social bullying for males and females. A significant moderate negative correlation between Extraversion and social bullying was found for males (r = -.26, p = .004). Therefore, the results of this interaction revealed a moderation, since the association between low Extraversion and high social bullying was only significant for males (see Figure 1).

Table 11

Logistic Regression Analysis of Interaction between Extraversion and Sex for Adolescent Social Bullying (n =222).

Variables	*ß (SE)*	*Wald X^2 test*	*Odds Ratio*	*Standardized Odds Ratio*	*95% Confidence Interval for Odds Ratio*	
					Lower	*Upper*
Sex[a]	6.16 (2.36)	6.83	475.33	0.80	4.66	48431.53
X	0.52 (0.47)	1.24	1.68	1.31	0.67	4.22
Sex x X	-1.81 (0.67)**	7.28**	0.16**	0.39**	0.04**	0.61**
(Constant)	-3.01 (1.68)	3.20				

Note. X = Extraversion.
[a] Sex was coded with 0 = female, 1 = male.
** p < .01.

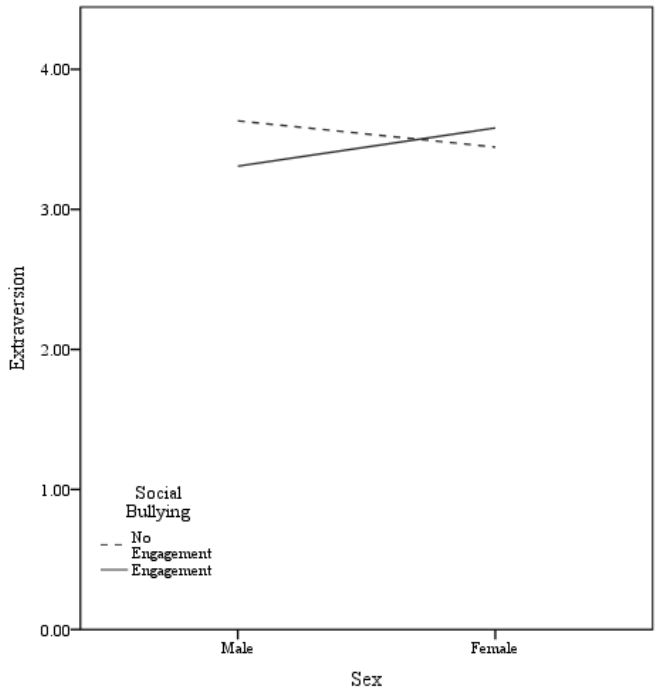

Figure 1. Sex moderating the association between adolescent extraversion and engagement in social bullying.

A second exploratory logistic regression revealed the association between being older and verbal bullying was moderated by sex. The regression revealed a good model fit with the with the addition of the individual factors as indicated through the Omnibus Tests of Model Coefficients, $X^2(3) = 26.36$, $p < .001$, Cox and Snell $R^2 = .11$, Nagelkerke $R^2 = .17$. Overall classification improved from 75.2% without the variables to 77.9% with these variables. Correction classification rates were 94% for adolescents who did not engage in verbal bullying and 29.1% for adolescents who engaged in verbal bullying. Being a male and the interaction between age and sex significantly increased the likelihood of verbal bullying by 2.14 and 2.24 times, respectively (see Table 11).

A split file revealed a significant moderate positive correlation between age and verbal bullying was found for males ($r = .39$, $p < .001$). Therefore, the results of this

interaction revealed a moderation, since the association between being older and high verbal bullying was only significant for males (see Figure 2).

Table 12

Logistic Regression Analysis of Interaction between Age and Sex for Adolescent Verbal Bullying (n =222).

Variables	*ß (SE)*	*Wald X^2 test*	*Odds Ratio*	*Standardized Odds Ratio*	*95% Confidence Interval for Odds Ratio*	
					Lower	*Upper*
Sex[a]	-6.60 (3.26)*	4.10*	0.01*	2.14*	0.00*	0.81*
Age	0.10 (0.16)	0.36	1.10	1.17	0.80	1.53
Sex x Age	0.52 (0.23)*	5.35*	0.05*	2.24*	1.08*	2.63*
(Constant)	-3.03 (2.38)	1.62				

[a] Sex was coded with 0 = female, 1 = male.
* $p < .05$.

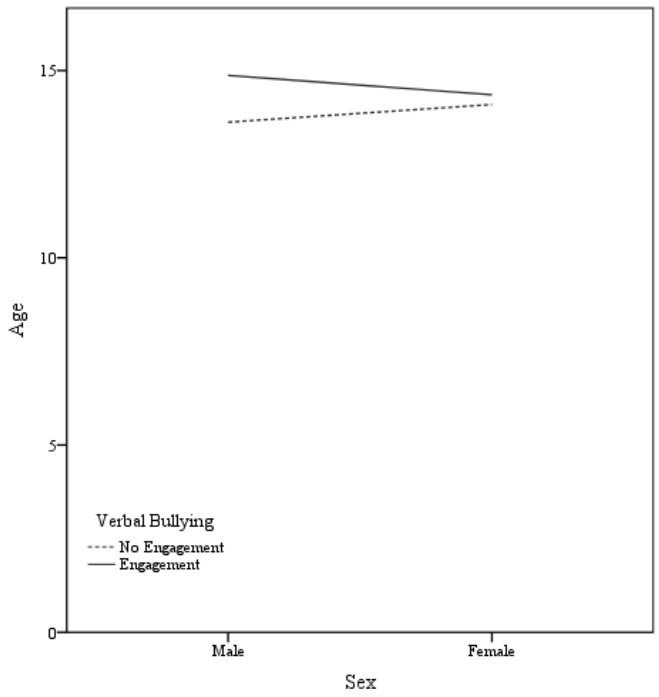

Figure 2. Sex moderating the association between adolescent age and engagement in verbal bullying.

In sum, the results for all logistic regressions partially supported the hypotheses for the two research questions. Each subtype of bullying was predicted by a unique combination of individual and environmental factors, with both independent and interactive effects. However, not all significant factors were hypothesized, and some expected factors predicted the subtypes in directions contrary to hypotheses.

Discussion

The purpose of this thesis was to apply an adaptive ecological theoretical framework to the investigation of which individual (sex, age, temperament, personality) and environmental (parental monitoring, parental support, friendship quality, school climate, SES) factors significantly predicted physical, verbal, social, racial, and sexual bullying in a simultaneous analysis. As hypothesized, each subtype was predicted by a unique combination of the factors with both independent and interactive effects. The subtypes were primarily predicted by sex, age, and personality, suggesting that the immediate microsystem was a greater influence on bullying than Bronfenbrenner's wider meso- and exo- systems. Furthermore, all but one subtype was predicted by Honesty-Humility, suggesting the willingness for bullies to exploit their victims, as opposed to a general tendency for aggression. However, the additional significant demographic and personality predictors unique to each subtype demonstrate the heterogeneous and adaptive benefits for adolescents to engage in a specific subtype, if they possess these traits. Each of the five subtypes of bullying will be discussed in further detail below.

Independent Effects

Physical Bullying. Physical bullying was the only subtype where both individual and environmental factors significantly increased the likelihood of engagement. The logistic regression for physical bullying demonstrated that each step, with the exception of step three containing Rothbart's temperament traits, contributed significant variance to the model. It is not entirely surprising that the HEXACO factors came out as significant predictors in comparison to temperament, given that personality traits become more complex during adolescence to include thoughts and beliefs that develop with experience

(De Pauw & Mervielde, 2010; Grist & McCord, 2010; Shiner & Caspi, 2012). Thus, the regression demonstrates that the most succinct model of physical bullying may include sex, personality, and several environmental factors.

Within the immediate microsystem, the association found between being a male and engaging in physical bullying agrees with previous literature (Boulton et al., 2002; Monks et al., 2009; Pontzer, 2010; Wang et al., 2010; 2012). These findings support the idea that in comparison to females, males are evolutionarily more likely to engage in risky, overt behaviors due to their lower biological vulnerability during reproduction (Archer, 2009; Volk et al., 2012). This suggests that male physical strength may be attractive to the opposite sex, which may increase chances of reproduction. In fact, Gallup, White, and Gallup (2007) found that males with greater physical strength engaged in more physical aggression, and had a larger number of sexual partners.

Surprisingly, physical bullying was also predicted by low Agreeableness. Although not hypothesized, the association with low Agreeableness is consistent with some previous studies that found children (Tani et al., 2003) and adolescents (Bollmer et al., 2006) that were low in Big Five Agreeableness engaged in more global bullying. This association can be explained with the notion that Agreeableness captures general aggression (as opposed to selective aggression; Book et al., 2012), and a low tolerance for exploitation by others (Lee & Ashton, 2012a). This finding supports the frustration-aggression hypothesis (Berkowitz, 1989), where adolescents who engage in this subtype may be easily irritable and reactive when experiencing barriers that prevent obtaining his or her goals. In fact, some studies have also found evidence for an association between this hypothesis and reactive subtypes of bullying (e.g., Salmivalli & Nieminen, 2002).

This relationship is also supported by my finding that both Conscientiousness and Effortful Control, two traits concerning self-regulation, were both negatively correlated with physical bullying. Being low in Agreeableness and engaging in physical bullying provides adolescents with the evolutionary advantage that they will not be the recipient of similar bullying behaviors (Lee & Ashton, 2012b). However, surprisingly, physical bullying was the only subtype not predicted by Honesty-Humility, or a willingness to exploit others. It is possible that the addition of multiple non-significant personality, temperament, and environmental factors diluted the influence of Honesty-Humility. Therefore, removing the non-significant factors may reveal a significant relationship between physical bullying and low Honesty-Humility, such that physical bullies both exploit others, and have no tolerance for being exploited by others.

Within the environmental microsystem, the association found between low parental support and physical bullying has also been previously supported. Low parental support models hostility and aggression (Bowes et al., 2009; Swearer & Doll, 2001). Adolescents may internalize such modeling and resort to physical bullying behaviors to adaptively obtain resources from their peers (Espelage et al., 2012; Holt et al., 2009; Waasdorp et al., 2011). However, the positive association between friendship quality and physical bullying was surprising. Although I predicted an association with friendship quality, the result was in the opposite direction. Several studies have found that high friendship quality is an ecological buffer to engaging in bullying (Bollmer et al., 2005; Crawford & Manassis, 2011). On the contrary, my findings suggest high friendship quality may be a prerequisite to engage in physical bullying. It is possible that the definition of friendship quality may influence this subtype. For adolescents, high

friendship quality may indicate compliance to friendship norms (Hall, 2006). Therefore, if group norms include physical bullying, then replication of these behaviors may demonstrate social cohesion, which may be interpreted as high friendship quality (Barboza et al., 2009). This explanation supports my finding discussed earlier between being a male and engaging in physical bullying. From an evolutionary framework, male friendships often have expectations of social cohesion, competition with out-groups, and shared activities (Caldwell & Peplan, 1982; Hall, 2006; Hussong, 2000). In comparison to females, males have often been found to prefer same-sex intergroup competitions in order to demonstrate strength and dominance (Benenson, 2009). Moreover, a study by Benenson, Markovits, Thompson, and Wrangham (2009) found that both males and females preferred to create coalitions with arbitrary individuals labelled as "friends" during competitions when they felt their own competitive ability could be strengthened. An alternative explanation may be that adolescents may join the friendships of physical bullies out of fear, and thus as a preventative measure from becoming their next victim (Kärnä et al., 2010). By joining such friendships, these adolescents may obtain both friends and social dominance. Furthermore, having solid, loyal friendships in comparison to poor friendships may provide more benefits during risky physical conflict (Hall, 2006). Thus, these findings and explanations suggest successful engagement in shared activities and intergroup competitions (i.e. physical bullying) may result in perceptions of high friendship quality.

In sum, my findings demonstrate that adolescents may engage in physical bullying for evolutionary purposes due to individual and environmental factors. However, considering the factor with the largest effect size (as demonstrated through the

standardized odds ratios) was for sex, which was approximately six times larger than the other significant factors, the influence of environmental factors (friendship quality, parent support) may be secondary to the influence of individual factors. Additionally, the significant factors were all from the microsystem, suggesting a stronger influence from this ecological system, in comparison to Bronfenbrenner's wider meso- and exo- systems.

Verbal Bullying. The hierarchical logistic regression for verbal bullying demonstrated that the most succinct model for predicting engagement includes only the demographic and HEXACO factors in the immediate microsystem. While the final two steps consisting of Rothbart's temperament traits and environmental factors added complexity to the model, they did not contribute any significant variance.

Verbal bullying was predicted by both demographic factors. The association with being older was expected, and is consistent with previous studies that found although verbal bullying peaks during middle adolescence, this subtype continues to occur throughout adolescence (Boulton et al., 2002; Monks et al., 2009). Although the association with males was not originally predicted, it is logical given that males engage in more overt subtypes of bullying than females (Monks et al., 2009). Similar to physical bullying, this finding supports the idea of evolutionary sex differences in risky behavior given the overt and identifiable nature of verbal bullying, in comparison to the lower levels of risk associated with covert subtypes (Archer, 2009; Volk et al., 2012).

Verbal bullying was the only subtype significantly predicted by a variety of personality factors. The association with low Honesty-Humility was expected since the only two known studies that investigated bullying with the HEXACO by Book and colleagues (2012) and Farrell and colleagues (2014) found that low Honesty-Humility

predicted general and verbal bullying, respectively. Since low Honesty-Humility is concerned with premeditation and exploitation of others (Lee & Ashton, 2004), this supports the notion that bullying may be an evolutionary adaptation that involves intentions beyond general aggression, including manipulating others for personal gain. Thus, for this subtype, adolescents may be using words as a mechanism to successfully exploit their victims.

The association between low Agreeableness and verbal bullying was not hypothesized. However, the association between this personality factor and global bullying has been previously supported (Connolly & O'Moore, 2003; Pontzer, 2010). Considering low Agreeableness was also found as a predictor for physical bullying, this finding further supports the frustration-aggression hypothesis (Berkowitz, 1989), where these two subtypes may be associated with a high level of general aggression, frustration, and intolerance for exploitation by others. Thus, these subtypes may potentially be reactive in nature under environments of high stress (Book et al., 2012; Marini et al., 2010; Tani et al., 2003). However, the difference between the two subtypes may be that adolescents who are physically adept may strategically prefer physical bullying, while those who are more verbally adept may prefer verbal bullying.

The association with low Extraversion and verbal bullying was also unexpected and surprising, given the overt and attention attracting nature of this subtype, as well as the positive association traditionally found between Extraversion and global bullying (Connolly & O'Moore, 2003; Tani et al., 2003). However, this finding may compliment the association between low Agreeableness and verbal bullying found and discussed earlier. Individuals who are high in Extraversion tend to be more sociable, agreeable, and

cheerful, which are all opposite to the characteristics of people low in Agreeableness (Lee & Ashton, 2012b). Thus, being low in Extraversion, in addition to low Agreeableness and low Honesty-Humility, may provide adolescents with the advantage of efficiently using minimal time and energy to exploit others, while at the same time preventing themselves from being exploited by others.

It is also possible that the association with low Extraversion could be attributed to the unique characteristics of this sample. The adolescents who did not engage in verbal bullying had unusually high Extraversion in comparison to the adolescents who engaged in verbal bullying. Considering the number of non-bullies was three times larger than the number of verbal bullies, the slightly higher Extraversion in the non-bullies may have overpowered Extraversion in the bullies, resulting in the negative predictor. In sum, the results demonstrate that adolescents may engage in verbal bullying due to evolutionary individual factors in the immediate microsystem as opposed to factors in the wider meso- and exo-systems. Furthermore, considering the effect sizes of the demographic and personality factors were similar, it is evident that these factors have equivalent importance for predicting verbal bullying.

Social Bullying. Similar to verbal bullying, the regression for social bullying demonstrated that the most succinct model for predicting engagement should include only the first two steps of demographic variables and HEXACO factors. Subsequently, neither of the final two steps containing the temperament and environmental factors contributed significant variance to the model. Thus, the immediate individual factors in the microsystem appear to be the primary influences for social bullying.

Both significant predictors in the second step were hypothesized. Older age has previously been associated with social bullying (Boulton et al., 2002; Monks et al., 2009; Pontzer, 2010; Wang et al., 2010; 2012). The results reflect evolutionary age differences, where adolescents increasingly resort to premeditated covert subtypes of bullying as they age, in order to avoid the risk of getting caught and/or punished. Similarly, the association between low Honesty-Humility and social bullying was previously found (Book et al., 2012; Farrell et al., 2014). This finding suggests that adolescents who engage in this subtype may feel entitled to a high social position, and are using social bullying to manipulate peers and obtain social goals (Baughman et al., 2012; Peeters et al., 2010; Vaillancourt et al., 2003). Thus, in contrast to physical and verbal bullying, which may at times include a combination of both selective and reactive aggression, social bullying may primarily rely on selectively exploiting others. In sum, the results demonstrate that adolescents may engage in social bullying due in part to becoming older and having low Honesty-Humility. Given the reliance on manipulating peer networks for effectively engaging in social bullying, it was surprising that environmental factors concerning peer networks, such as friendship quality and school climate, were not significant predictors. However, low Honesty-Humility had the largest effect size in this model, which suggests that adolescents may have a strong tendency to possess this internal trait for exploitation in any given environment. Alternatively, it is possible that the large number of predictors in the model could have diluted the power to detect the effects of environmental factors.

Racial Bullying. Similar to verbal and social bullying, results from the regression for racial bullying showed that only the first two steps were significant in predicting

engagement. Thus, only demographic variables and personality factors contributed significant variance, while unexpectedly, temperament and environmental factors did not significantly increase the accounted variance. Therefore, the immediate individual factors in the microsystem were once again the only important influences.

Age and sex as significant predictors were both hypothesized. Being older and being a male have traditionally been associated with racial bullying (Espelage et al., 2012; Hong & Espelage, 2012; Volk et al., 2006). This is logical given that individuals may become more opinionated and less tolerant of out-group members as they become older; including racial out-groups (Larochette et al., 2010). Evolutionarily, this growing intolerance for out-groups promotes kin and offspring survival (Archer, 2009; Benenson, 2009; Dawkins, 1989). Additionally, researchers have often found males were more likely to engage in racial bullying in comparison to females (Espelage et al, 2012; Larochette et al., 2010; Volk et al., 2006). From an evolutionary perspective (Benenson, 2009), considering the risky stigma of engaging in racism, males may be more likely to engage in this subtype for reasons similar to physical and verbal bullying.

The association with low Honesty-Humility was predicted considering all bullying may involve an intention to exploit others (Book et al., 2012; Volk et al., 2006). This suggests that for racial bullying, adolescents may require this trait to strategically use race as a mechanism when taking advantage of their victims. However, considering the effect size for sex was almost seven times larger than the effect sizes for age and Honesty-Humility, this suggests one of the most important prerequisites for racial bullying may be associated with social and/or biological sex differences in risky behavior (Benenson, 2009).

Sexual Bullying. While the first step with demographic factors contributed significant variance to the regression model for sexual bullying, it did not demonstrate a good model fit since the observed data was significantly different from the predicted data. However, the demographic variables contributed significant variance in comparison to the exclusion of these variables. On the contrary, in the second step, the regression demonstrated a good model fit, although this step, in addition to the final two steps, did not contribute any significant variance to the model. These results suggest that the demographics in the immediate microsystem may contribute unique variance to the model, but may not accurately predict engagement. However, while the addition of personality factors may improve the model fit as a whole, the six HEXACO factors may not contribute a significant amount of variance beyond sex and age. Instead, even if the variance accounted for in the model increases with the addition of personality, it may have been for random reasons, as a result of the large number of predictors. Thus, while the inclusion of the HEXACO factors may be the most accurate model, it may not be the most succinct. I will discuss the significant predictors from both the first and second steps.

The associations with age and sex were both predicted for sexual bullying. Researchers have previously found sexual bullying occurs more often during older adolescence, considering sexual exploration occurs during this developmental period as opposed to early adolescence (Volk et al., 2006). In addition, the association with males reflects evolutionary advantages for males to engage in risky subtypes of bullying. Given that males have greater opportunities and less biological repercussions for reproduction,

any setbacks from engaging in sexual bullying, such as getting caught, may be more costly to future female mating opportunities (Archer, 2009; Volk et al., 2012).

In step two, the association with low Honesty-Humility, was expected and has previously been found, further providing support for the idea that bullying may require an intention to exploit others (Book et al., 2012). This suggests that adolescents are using sexual comments, gestures, and behaviors to strategically manipulate their peers for evolutionary benefits. This may include taking advantage of potential mates such as physical behaviors or threats, or eliminating potential competitors such as through ruining their reputations (Volk et al., 2006).

In sum, similar to racial bullying, findings on sexual bullying demonstrate that adolescents may require certain individual characteristics in order to use sexuality as a tool to exploit their victims. However, unlike racial bullying, the personality factors did not significantly contribute unique variance, even though their addition improved the model as a whole. Considering the largest effect size was for sex, even though it was only slightly larger than the other factors, one explanation may be that sexual bullying is primarily associated with sex differences as opposed to extraneous factors. Alternatively, sexual bullying may be strongly influenced by only one personality factor (i.e. Honesty-Humility), that the addition of the other five unrelated personality factors is diluting the model's ability to detect a non-random effect.

Interactive Effects

As expected, the exploration of the mesosystem revealed an interaction effect. The association between low Extraversion and high engagement in social bullying was moderated by sex, as this relationship was only true for males. At first, sex as a moderator

was surprising, given those who engage in social bullying may require high Extraversion to create social networks within which successful manipulation can occur. Furthermore, females have been found to use more social bullying than males (Smokowski & Kopasz, 2005). It is possible that females are more likely to use social bullying regardless of their levels of Extraversion, while males are more likely to use social bullying only if they are low in Extraversion. Considering the high pole of Extraversion is associated with confidence, outgoingness, and attraction of attention (Lee & Ashton, 2004), if males do not possess these traits, they may prefer to use covert, less risky behaviors instead of overt subtypes. Social bullying may allow these males to obtain social dominance within their peer groups and increase mating opportunities with the opposite sex. For instance, a male adolescent may anonymously spread rumors and tarnish the reputation of male competitors. In comparison to the males that are gossiped about, the anonymous social bully may become viewed by males as a more appropriate friend, and by females as a more appropriate mate. Furthermore, anonymity may be important for adolescents who are self-conscious and have low social self-esteem (Caravita et al., 2009).

An alternative explanation may be attributed to the finding that social bullying was also predicted by low Honesty-Humility in the hierarchical logistic regression. Lee and Ashton (2012b) explain that individuals who are low in both Honesty-Humility and Extraversion feel entitled, yet do not possess the charisma to become leaders of a social group. Instead, these individuals use their skillful manipulations to obtain other resources, such as material luxuries. Consequently, males low in Honesty-Humility and Extraversion may find social bullying most advantageous, as opposed to direct physical

or verbal bullying, even if it is to obtain non-social goals. However, seeing as this was an unusual finding, future studies should examine this further.

The second interaction between being older and verbal bullying was also moderated by sex, as this relationship was only true for males. Although this moderation was not predicted, this finding is reasonable. As discussed earlier, males often engage in more physical and verbal bullying in comparison to females (Smokowski & Kopasz, 2005). Furthermore, although verbal bullying peaks during middle adolescence, its levels remain high, while rates of physical bullying decline after middle adolescence (Wang et al., 2010; 2012). Therefore, it is possible that as males grow older, their preference for engaging in direct subtypes of bullying transfers from physical bullying to slightly less risky and overt verbal bullying.

In summary, the interactions found for social and verbal bullying demonstrates how adolescents adaptively use these subtypes to obtain benefits, if they possess specific individual characteristics. Furthermore, considering these two interactions were with individual factors as opposed to environmental factors, the results suggest that the immediate, internal characteristics of the microsystem may have a greater influence in engagement of these two subtypes, as opposed to the wider, surrounding systems in Bronfenbrenner's ecological model.

Implications

Theory. The findings have several implications for the conceptualization of bullying. While some studies have often classified all subtypes into global bullying (Bowes et al., 2009), other studies have often classified subtypes into two groups; either direct or indirect (Smokowski & Kopasz, 2005), and proactive or reactive (Marini et al.,

2009). The unique combination of significant predictors found at different steps for each subtype in my thesis suggests that grouping all subtypes into global bullying may not be valid. Instead, my results demonstrate that bullying may be heterogeneous and can be used as a facultative evolutionary adaptation (Volk et al., 2012). Considering all subtypes except physical bullying was predicted by low Honesty-Humility, the majority of the subtypes may involve strategic and selective intentional exploitation of others, which goes beyond a general tendency for reactive aggression. However, the other significant predictors, in addition to low Honesty-Humility, may provide evolutionary advantages that encourage adolescents to engage in one subtype of bullying over another. For example, male adolescents who are low in Honesty-Humility and are also low in Agreeableness may use verbal bullying to exploit others, while prevent becoming the victim of someone else's exploitation. Conversely, older male adolescents who are low in Honesty-Humility may use sexual bullying to obtain romantic partners. Additionally, it may be advantageous for males who are low in Extraversion to use social bullying as opposed to physical bullying. Consequently, while adolescents likely use bullying for personal gain, the specific strategy they find most adaptive and useful may vary depending on demographic and personality traits.

Despite these unique differences, some similarities found between the subtypes provide support for the validity of classifying the subtypes into broader groups. For example, physical and verbal bullying, which are traditionally classified as reactive and/or direct bullying (Smokowski & Kopasz, 2005), demonstrated overlap in the predictors of sex and low Agreeableness. This suggests that adolescents who engage in these two subtypes may be males who have a general tendency for aggression, and

therefore may be reactive bullies. Additionally, social, racial, and sexual bullying all had overlaps in the predictors of age and low Honesty-Humility. This demonstrates that adolescents who engage in these subtypes may be older, and are proactively manipulating their peers in order to obtain resources. Thus, these convergences provide some support for the classification of the subtypes as direct versus indirect, and reactive versus proactive.

However, these two groupings may not be as clear cut for racial and sexual bullying, since these subtypes may be classified under multiple groups. Both racial and sexual bullying can use physical, verbal, and social bullying behaviors (Volk et al., 2006). Thus, it is possible that these subtypes can be both direct and indirect, and in turn, both reactive and proactive. Phi-coefficients between the five subtypes further demonstrated complications in the classifications. For example, while racial and sexual bullying had the same significant predictors in the regression (although at different steps), they had one of the smallest phi-coefficients amongst all of the subtypes. Additionally, while the regressions demonstrated similarities in predictors between physical and verbal subtypes, the phi-coefficients revealed that physical bullying had similar significant, medium sized coefficients with the four other subtypes. This suggests that adolescents who engage in physical bullying may also have relatively equal likelihoods of engaging in the other four subtypes, regardless of whether they are traditionally classified as direct/indirect, or reactive/proactive. Furthermore, verbal bullying had the largest correlations with the other subtypes, specifically with social, sexual, and racial bullying. This suggests that adolescents who engage in one of these subtypes may be similarly or equally likely to engage in the other three subtypes. However, it is important to note that

the largest phi-coefficient between the subtypes was medium in size. Therefore, this suggests that some overlaps may exist amongst the subtypes, and that they can be categorized into larger groups, although it is not clear whether dichotomous grouping is the most valid method for all subtypes. It is possible that this modest overlap could be attributed to the willingness to exploit others, which characterizes low Honesty-Humility, since this was the common predictor amongst all subtypes (except physical bullying). However, the sizes of the coefficients indicate that each subtype may still be independent beyond Honesty-Humility with respect to some of its associated predictors, adaptiveness, intentions, and outcomes. Therefore, this may prevent well-defined categorization of the subtypes. Considering relatively few studies have explored multiple subtypes of bullying, future studies may be able to provide additional evidence for the conceptualization and classification of the subtypes.

In addition to the implications for the categorization of bullying, the findings have numerous implications regarding the predictors of the subtypes. The HEXACO factors came up as the most common significant predictors, and personality has been found to be heavily influenced by genes (Lee & Ashton, 2012b). Thus, the results suggest bullying behaviors may be rooted in dispositional individual differences, where the dispositions may vary between subtypes. In fact, a study by Lewis and Bates (2014) found a single genetic basis that explained genetic covariance among the facets for each of the six HEXACO factors. Additionally, since temperament was not a significant predictor for any of the subtypes, this suggests that during adolescence, innate individual traits may change to reflect growth and development during this period (De Pauw & Mervielde, 2010; Grist & McCord, 2010; Shiner & Caspi, 2012). This development and experience

may influence adolescents to strategically and adaptively use one subtype of bullying over another.

Moreover, considering the majority of the significant results were between bullying and individual factors, and the effect sizes for the individual factors were larger than for the environmental factors, the results suggest implications regarding Bronfenbrenner's EST. First, the immediate, internal individual factors in the microsystem may be more succinct predictors for the subtypes of bullying than the environmental factors in the micro-, meso-, and exo- systems when exploring multiple factors simultaneously. In fact, both the overall variance accounted for, and the correction classification rates for engagement in all subtypes (except physical bullying), increased only slightly when environmental factors were added. On the contrary, the variance and classification rates for all subtypes increased substantially with the addition of personality factors. The importance of the individual factors in the microsystem is further reinforced by the few number of interactions (i.e. mesosystem) found. In sum, the results provide important implications for the conceptualization of bullying from an evolutionary ecological framework.

Practice. The unique combination of predictors found for each subtype of bullying suggests that since bullying may be heterogeneous, interventions must be customized to target specific subtypes of bullying at the home, school, and community levels. Ellis and colleagues (2012) and Yoon, Barton, and Taiariol (2004), suggest that "one-size-fits-all" approaches to anti-bullying initiatives may not be effective, since they treat all bullying in the same manner. Furthermore, Yoon and colleagues reported that anti-bullying initiatives must target the individual and relational contexts under which

bullying occur. Therefore, the specific individual characteristics associated with each subtype should be targeted for effective prevention and intervention initiatives. For instance, my findings suggest that when targeting physical bullying, interventions should focus on reducing general aggression or irritability, emotion regulation, how adolescents define positive relationships, and consciously building supportive parental and peer relationships, especially for males. When targeting verbal bullying, my findings suggest examining multiple personality traits such as irritability, Extraversion, and how well adolescents can manipulate others. When targeting social, racial, and sexual bullying, my results demonstrate the primary focus should be on the trait of Honesty-Humility, especially for older adolescents, such as building empathy and helping adolescents recognize the negative effects their behaviors can have on their peers.

Limitations and Future Directions for Research

There were several limitations to my thesis that could be addressed in future research. First, the sample was comprised of primarily White and middle class adolescents who came from the same local extracurricular clubs in neighbourhoods with similar SES. Although the results may be generalizable to similar populations, the lack of environmental variability in the sample may have limited the number of significant environmental factors found in the fourth step of the regressions. Studies have found that children and adolescents from similar SES likely experience similar styles of parenting, socialization, and peer relationships (Bradley & Corwyn, 2002). As a result, looking at bullying in a sample with homogeneous environmental factors may not provide much unique information about the association between bullying and varying ranges of environmental factors. Instead, significant associations only for the first two steps may

have been found, since these factors concerned individual differences with greater variability. Therefore, future studies may want to use more diverse samples to determine whether the results would be replicated, or a greater number of significant associations with environmental factors will be found.

Second, regarding methodology, I used self-report measures, and therefore my results are limited to the adolescent perceptions of the ecological variables and the subtypes of bullying. If adolescents are better able to perceive their own personality as opposed to perceiving their environment, this may explain why no environmental factors were significant predictors for the majority of the subtypes. However, previous studies have found self-reports can be valid for investigating bullying (Book et al., 2012; Pellegrini & Bartini, 2000). Furthermore, all of the measures used in my thesis were used in previous studies. Therefore, future studies may use both self and observer reports for the variables, which would also make for a true ecological study.

A third limitation was how the study was cross-sectional, and therefore cause-and-effect relationships could not be inferred. My results do not indicate whether the HEXACO factors can cause the subtypes, or vice versa. Moreover, it is possible that the environmental factors in the meso- or exo- systems could cause adolescents to possess some HEXACO factors. Therefore, future longitudinal studies starting from early adolescence and continuing into adulthood may be able to determine the direction of relationships between the factors, and the five subtypes of bullying.

A fourth limitation is how I analyzed two-way, linear interactions. It is possible that three-way and/or non-linear interactions may exist. For instance, adolescents are typically increasingly resistant to peer influence as they age (Sumter, Bokhorst,

Steinberg, & Westenberg, 2009). However, as demonstrated through the results, certain personality traits such as Honesty-Humility or Extraversion may play a greater role in socialization and peer influence. Therefore, friendship quality and school connectedness may interact with age and personality factors in three-way interactions. This could explain both the few number of interactions found in this thesis, and the few number of significant environmental factors found. Therefore, future studies may look at three-way non-linear interactions to determine more complex relationships between the factors.

Finally, in comparison to the number of adolescents who engaged in the subtypes of bullying, a greater number of adolescents who did not engage in the subtypes of bullying were correctly identified in the regressions. Along the same lines, small to medium effect sizes were found in the regressions, where social and racial bullying had the smallest and largest variances accounted for, respectively. These two findings suggest that other factors may influence the likelihood of engaging in the subtypes of bullying, beyond the factors investigated in my thesis. Nonetheless, this range of effect sizes is common in the social sciences (Cohen, 1988). Future studies may want to include additional factors in the microsystem. For instance, researchers may investigate teacher roles, as some studies suggest that the attitudes and behaviors of teachers may influence bullying in a classroom (Espelage & De La Rue, 2012). Some studies may also examine the mental health of bullies, as some research suggests bullies target victims who exhibit symptoms of depression or anxiety (Hong & Espelage, 2012). Finally, studies could explore additional interactions in the mesosystem such as the three-way or non-linear interactions discussed earlier. This will help discover whether larger effect sizes and correction classification rates can be found.

Conclusions

Despite the limitations and future directions for research, my thesis revealed that adolescents may use bullying intentionally and selectively as an adaptation to obtain resources. Additionally, the specific subtype adolescents find most beneficial may vary based primarily on which individual factors they possess within the immediate microsystem, since all subtypes had a distinct combination of predictors at different steps in the regressions. Specifically, being a male and having low Agreeableness in combination with low parental support and high friendship quality influenced physical bullying. Verbal bullying was predicted by a variety of personality factors, including low Honesty-Humility, Agreeableness, and Extraversion, which may pertain to older males. Finally, low Honesty-Humility was the primary influence for social, racial, and sexual bullying, in addition to some demographic factors. In conclusion, the results suggest the necessity to address these various ecological factors when preventing and intervening adolescent bullying, while also providing alternative methods for adolescents to obtain resources.

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Appendix A: Demographics

1. How old are you?_____
2. What grade are you in?_____
3. Which parents do you live with at home (e.g., birth or adopted, mom & dad, just mom, mom & stepdad, etc.)?_____
   _____
4. If your parents are divorced, how long have they been divorced?_____
5. What is your ethnic/racial background?_____
6. Compared to the average Canadian, do you think your family is (circle one):

a lot less rich less rich about the same more rich a lot more rich

Appendix B: Bullying Questionnaire

Below are some questions about social relationships at school. Please answer them as honestly as you can. Your answers will be kept completely confidential, and there is no way for anyone to determine your answers about your relationship with them or anyone else.

1. In school, how often have you made fun of someone much weaker or less popular because of their religion or race last term? (please circle the answer below)
a) that hasn't happened
b) once or twice
c) once a month
d) once a week
e) several times a week

2. In school, how often have you hit, slapped, or pushed someone much weaker or less popular last term? (please circle the answer below)
a) that hasn't happened
b) once or twice
c) once a month
d) once a week
e) several times a week

3. In school, how often have you threatened, yelled at, or verbally insulted someone much weaker or less popular last term? (please circle the answer below)
a) that hasn't happened
b) once or twice
c) once a month
d) once a week
e) several times a week

4. In school, how often have you spread rumours, mean lies, or actively excluded someone much weaker or less popular last term? (please circle the answer below)
a) that hasn't happened
b) once or twice
c) once a month
d) once a week
e) several times a week

5. In school, how often have you made sexual jokes, comments, or gestures aimed at someone much weaker or less popular last term? (please circle the answer below)
a) that hasn't happened
b) once or twice
c) once a month
d) once a week
e) several times a week

Appendix C: Rothbart's Early Adolescent Temperament Questionnaire Revised

How "true" is each statement for you?

		ALMOST ALWAYS UNTRUE	USUALLY UNTRUE	SOMETIMES TRUE, SOMETIMES UNTRUE	USUALLY TRUE	ALMOST ALWAYS TRUE
1.	It is easy for me to really concentrate on homework problems.	○	○	○	○	○
2.	I think it would be exciting to move to a new city.	○	○	○	○	○
3.	I have a hard time finishing things on time.	○	○	○	○	○
4.	I feel shy with kids/teens of the opposite sex.	○	○	○	○	○
5.	It's hard for me not to open a present before I'm supposed to.	○	○	○	○	○
6.	I want to be able to share my private thoughts with someone else.	○	○	○	○	○
7.	When someone tells me to stop doing something it is easy for me to stop.	○	○	○	○	○
8.	I feel shy about meeting new people.	○	○	○	○	○
9.	I do something fun for a while before starting my homework, even when I'm not supposed to.	○	○	○	○	○
10.	I wouldn't like living in a really big city, even if it was safe.	○	○	○	○	○
11.	It bothers me when I try to make a phone call and the line is busy.	○	○	○	○	○
12.	The more I try to stop myself from doing something I shouldn't, the more likely I am to do it.	○	○	○	○	○
13.	Skiing fast down a steep slope sounds scary to me.	○	○	○	○	○
14.	I enjoy hugging people who I like.	○	○	○	○	○
15.	If I have a hard assignment to do, I get started right away.	○	○	○	○	○
16.	I get frightened riding with a person who likes to speed.	○	○	○	○	○
17.	I find it hard to shift gears when I go from one class to another at school.	○	○	○	○	○
18.	I worry about my family when I'm not with them.	○	○	○	○	○
19.	I get very upset if I want to do something and my parent(s) won't let me.	○	○	○	○	○
20.	When trying to study, I have difficulty tuning out background noise and concentrating.	○	○	○	○	○
21.	I finish my homework before the due date.	○	○	○	○	○
22.	I will do most anything to help someone I care about.	○	○	○	○	○
23.	I worry about getting into trouble.	○	○	○	○	○
24.	I am good at keeping track of several different things that are happening around me.	○	○	○	○	○

25.	I would not be afraid to try a risky sport, like deep sea diving.	○	○	○	○	○
26.	It's easy for me to keep a secret.	○	○	○	○	○
27.	It is important to me to have close relationships with other people.	○	○	○	○	○
28.	I am shy.	○	○	○	○	○
29.	Some kids/teens, who push people and throw their stuff around, make me nervous.	○	○	○	○	○
30.	I get irritated when I have to stop doing something that I am enjoying.	○	○	○	○	○
31.	I wouldn't be afraid to try something like mountain climbing.	○	○	○	○	○
32.	I put off working on projects until right before they're due.	○	○	○	○	○
33.	I worry about my parent(s) dying or leaving me.	○	○	○	○	○
34.	I enjoy going places where there are big crowds and lots of excitement.	○	○	○	○	○
35.	I am not shy.	○	○	○	○	○
36.	I am quite a warm and friendly person.	○	○	○	○	○
37.	It really annoys me to wait in long lines.	○	○	○	○	○
38.	I feel scared when I enter a darkened room at home.	○	○	○	○	○
39.	I pay close attention when someone tells me how to do something.	○	○	○	○	○
40.	I get very frustrated when I make a mistake in my school work.	○	○	○	○	○
41.	I tend to get in the middle of one thing, then go off and do something else.	○	○	○	○	○
42.	It frustrates me if people interrupt me when I'm talking.	○	○	○	○	○
43.	I can stick with my plans and goals.	○	○	○	○	○
44.	I get upset if I'm not able to do a task really well.	○	○	○	○	○

Appendix D: HEXACO Personality Inventory-Revised

1 = strongly disagree 2 = disagree 3 = neutral 4 = agree 5 = strongly agree

1 ____ I would be quite bored by a visit to an art gallery.

2 ____ I clean my office or home quite frequently.

3 ____ I rarely hold a grudge, even against people who have badly wronged me.

4 ____ I feel reasonably satisfied with myself overall.

5 ____ I would feel afraid if I had to travel in bad weather conditions.

6 ____ If I want something from a person I dislike, I will act very nicely toward that person in order to get it.

7 ____ I'm interested in learning about the history and politics of other countries.

8 ____ When working, I often set ambitious goals for myself.

9 ____ People sometimes tell me that I am too critical of others.

10 ____ I rarely express my opinions in group meetings.

11 ____ I sometimes can't help worrying about little things.

12 ____ If I knew that I could never get caught, I would be willing to steal a million dollars.

13 ____ I would like a job that requires following a routine rather than being creative.

14 ____ I often check my work over repeatedly to find any mistakes.

15 ____ People sometimes tell me that I'm too stubborn.

16 ____ I avoid making "small talk" with people.

17 ____ When I suffer from a painful experience, I need someone to make me feel comfortable.

18 ____ Having a lot of money is not especially important to me.

19 ____ I think that paying attention to radical ideas is a waste of time.

20 ____ I make decisions based on the feeling of the moment rather than on careful thought.

21 ____ People think of me as someone who has a quick temper.

22 ____ I am energetic nearly all the time.

23 ____ I feel like crying when I see other people crying.

24 ____ I am an ordinary person who is no better than others.

25 ____ I wouldn't spend my time reading a book of poetry.

26 ____ I plan ahead and organize things, to avoid scrambling at the last minute.

27 ____ My attitude toward people who have treated me badly is "forgive and forget".

28 ____ I think that most people like some aspects of my personality.

29 _____ I don’t mind doing jobs that involve dangerous work.

30 _____ I wouldn't use flattery to get a raise or promotion at work, even if I thought it would succeed.

31 _____ I enjoy looking at maps of different places.

32 _____ I often push myself very hard when trying to achieve a goal.

33 _____ I generally accept people’s faults without complaining about them.

34 _____ In social situations, I'm usually the one who makes the first move.

35 _____ I worry a lot less than most people do.

36 _____ I would be tempted to buy stolen property if I were financially tight.

37 _____ I would enjoy creating a work of art, such as a novel, a song, or a painting.

38 _____ When working on something, I don't pay much attention to small details.

39 _____ I am usually quite flexible in my opinions when people disagree with me.

40 _____ I enjoy having lots of people around to talk with.

41 _____ I can handle difficult situations without needing emotional support from anyone else.

42 _____ I would like to live in a very expensive, high-class neighborhood.

43 _____ I like people who have unconventional views.

44 _____ I make a lot of mistakes because I don't think before I act.

45 _____ I rarely feel anger, even when people treat me quite badly.

46 _____ On most days, I feel cheerful and optimistic.

47 _____ When someone I know well is unhappy, I can almost feel that person's pain myself.

48 _____ I wouldn’t want people to treat me as though I were superior to them.

49 _____ If I had the opportunity, I would like to attend a classical music concert.

50 _____ People often joke with me about the messiness of my room or desk.

51 _____ If someone has cheated me once, I will always feel suspicious of that person.

52 _____ I feel that I am an unpopular person.

53 _____ When it comes to physical danger, I am very fearful.

54 _____ If I want something from someone, I will laugh at that person's worst jokes.

55 _____ I would be very bored by a book about the history of science and technology.

56 _____ Often when I set a goal, I end up quitting without having reached it.

57 _____ I tend to be lenient in judging other people.

58 _____ When I'm in a group of people, I'm often the one who speaks on behalf of the group.

59 _____ I rarely, if ever, have trouble sleeping due to stress or anxiety.

60 _____ I would never accept a bribe, even if it were very large.

61 People have often told me that I have a good imagination.

62 I always try to be accurate in my work, even at the expense of time.

63 When people tell me that I'm wrong, my first reaction is to argue with them.

64 I prefer jobs that involve active social interaction to those that involve working alone.

65 Whenever I feel worried about something, I want to share my concern with another person.

66 I would like to be seen driving around in a very expensive car.

67 I think of myself as a somewhat eccentric person.

68 I don't allow my impulses to govern my behavior.

69 Most people tend to get angry more quickly than I do.

70 People often tell me that I should try to cheer up.

71 I feel strong emotions when someone close to me is going away for a long time.

72 I think that I am entitled to more respect than the average person is.

73 Sometimes I like to just watch the wind as it blows through the trees.

74 When working, I sometimes have difficulties due to being disorganized.

75 I find it hard to fully forgive someone who has done something mean to me.

76 I sometimes feel that I am a worthless person.

77 Even in an emergency I wouldn't feel like panicking.

78 I wouldn't pretend to like someone just to get that person to do favors for me.

79 I've never really enjoyed looking through an encyclopedia.

80 I do only the minimum amount of work needed to get by.

81 Even when people make a lot of mistakes, I rarely say anything negative.

82 I tend to feel quite self-conscious when speaking in front of a group of people.

83 I get very anxious when waiting to hear about an important decision.

84 I'd be tempted to use counterfeit money, if I were sure I could get away with it.

85 I don't think of myself as the artistic or creative type.

86 People often call me a perfectionist.

87 I find it hard to compromise with people when I really think I'm right.

88 The first thing that I always do in a new place is to make friends.

89 I rarely discuss my problems with other people.

90 I would get a lot of pleasure from owning expensive luxury goods.

91 _____ I find it boring to discuss philosophy.

92 _____ I prefer to do whatever comes to mind, rather than stick to a plan.

93 _____ I find it hard to keep my temper when people insult me.

94 _____ Most people are more upbeat and dynamic than I generally am.

95 _____ I remain unemotional even in situations where most people get very sentimental.

96 _____ I want people to know that I am an important person of high status.

97 _____ I have sympathy for people who are less fortunate than I am.

98 _____ I try to give generously to those in need.

99 _____ It wouldn't bother me to harm someone I didn't like.

100 _____ People see me as a hard-hearted person.

Appendix E: The Social Support Behaviors Scale

People help each other out in a lot of different ways. Suppose you had some kind of problem (were upset about something, needed help with a practical problem, were out of money, or needed some advice or guidance), how likely would (a) your mother, and (b) your father be to help you out in each of the specific ways listed below. We realize you may rarely need this kind of help, but if you did would your mother and father help in the ways indicated below? Try to base your answers on your past experience with your parents. Use the scale below, and circle one number under each parent, in each row.

1 – they would not do this

2 – they might do this

3 – they would probably do this

4 – the would certainly do this

	Mother				Father			
1. Would suggest doing something, just to take my mind off my problems.	1	2	3	4	1	2	3	4
2. Would visit with me.	1	2	3	4	1	2	3	4
3. Would comfort me if I was upset.	1	2	3	4	1	2	3	4
4. Would give me a ride if I needed one.	1	2	3	4	1	2	3	4
5. Would have lunch or dinner with me.	1	2	3	4	1	2	3	4
7. Would joke around or suggest doing something to cheer me up.	1	2	3	4	1	2	3	4
8. Would go to a movie or a concert with me.	1	2	3	4	1	2	3	4
9. Would suggest how I could find out more about a situation.	1	2	3	4	1	2	3	4
10. Would listen if I needed to talk about my feelings.	1	2	3	4	1	2	3	4
11. Would have a good time with me.	1	2	3	4	1	2	3	4
12. Would pay for my lunch if I was broke.	1	2	3	4	1	2	3	4
13. Would suggest a way I might do something.	1	2	3	4	1	2	3	4
14. Would give me encouragement to do something difficult.	1	2	3	4	1	2	3	4
15. Would give me advice about what to do.	1	2	3	4	1	2	3	4
16. Would chat with me.	1	2	3	4	1	2	3	4
17. Would help me figure out what I wanted to do.	1	2	3	4	1	2	3	4
18. Would show me that they understood how I was feeling.	1	2	3	4	1	2	3	4

19. Would tell me about feelings they have felt that are similar to my own to help my experience seem normal.	1	2	3	4	1	2	3	4
20. Would buy me a snack if I was short of money.	1	2	3	4	1	2	3	4
21. Would help me decide what to do.	1	2	3	4	1	2	3	4
22. Would give me a hug, or otherwise show me I was cared about.	1	2	3	4	1	2	3	4
23. Would help me figure out what was going on.	1	2	3	4	1	2	3	4
24. Would help me out with some necessary purchase.	1	2	3	4	1	2	3	4
25. Would not pass judgment on me.	1	2	3	4	1	2	3	4
26. Would tell me who to talk to for help.	1	2	3	4	1	2	3	4
27. Would loan me money for an indefinite period.	1	2	3	4	1	2	3	4
28. Would be sympathetic if I was upset.	1	2	3	4	1	2	3	4
29. Would stick by me in a crunch.	1	2	3	4	1	2	3	4
30. Would buy me clothes if I was short money.	1	2	3	4	1	2	3	4
31. Would tell me about available choices and options.	1	2	3	4	1	2	3	4
32. Would tell me I will be okay because they have been in the same position as me and got through it.	1	2	3	4	1	2	3	4
33. Would give me reasons why I should or should not do something.	1	2	3	4	1	2	3	4
34. Would show affection for me.	1	2	3	4	1	2	3	4
35. Would show me how to do something I didn't know how to do.	1	2	3	4	1	2	3	4
36. Would bring me little presents of things I needed.	1	2	3	4	1	2	3	4
37. Would tell me the best way to get something done.	1	2	3	4	1	2	3	4
38. Would loan me money and want to "forget about it."	1	2	3	4	1	2	3	4
39. Would tell me what to do.	1	2	3	4	1	2	3	4
40. Would help me to think about a problem.	1	2	3	4	1	2	3	4
41. Would explain how they have dealt with a problem that was similar to one I had.	1	2	3	4	1	2	3	4

Appendix F: Strictness-Supervision Subscale of Authoritative Parenting Scale

How much does your mother / stepmother (or female guardian) ask you about…

		SHE NEVER ASKS	SHE SOMETIMES ASKS	SHE USUALLY ASKS	SHE ALWAYS ASKS
A	where you go at night?	○	○	○	○
B	what you do with your free time?	○	○	○	○
C	where you are most afternoons after school?	○	○	○	○

How much does your father / stepfather (or male guardian) ask you about…

		HE NEVER ASKS	HE SOMETIMES ASKS	HE USUALLY ASKS	HE ALWAYS ASKS
A	where you go at night?	○	○	○	○
B	what you do with your free time?	○	○	○	○
C	where you are most afternoons after school?	○	○	○	○

Appendix G: Friendship Quality Questionnaire

Think about your very best friendship with a friend. These questions <u>are not a test</u>, there are no right or wrong answers. We just want to know what you think about your friendship with your friend. Please answer each statement by thinking of the same friend for **ALL** questions. Then tell me how true you think each statement is for you and your friend on a scale of 1 – 5 (use any whole number). A rating of 1 is not at all true and a rating of 5 is really true. Please circle only one answer per question. Please remember that your answers are completely confidential and your friend, or anyone else outside of the researchers, will never see your answers.

	Not at all true	**A little true**	**Somewhat true**	**Mostly true**	**Really true**
1. ____ and I live really close to each other	1	2	3	4	5
2. ____ and I always sit together at lunch. *If FRIEND was in my school/class, we would always sit together at lunch.*	1	2	3	4	5
3. ____ and I get mad at each other a lot.	1	2	3	4	5
4. ____ tells me I'm good at things.	1	2	3	4	5
5. If other kids were talking behind my back, ____ would always stick up for me.	1	2	3	4	5
6. ____ and I make each other feel important and special	1	2	3	4	5
7. ____ and I always pick each other as partners. *If FRIEND was in my class, we would always pick each other as partners.*	1	2	3	4	5
8. ____ tells me I'm pretty smart.	1	2	3	4	5
9. ____ and I are always telling each other about our problems.	1	2	3	4	5
10. ____ makes me feel good about my ideas.	1	2	3	4	5
11. When I'm mad about something that happened to me, I can always talk to ____ about it.	1	2	3	4	5
12. ____ and I argue a lot.	1	2	3	4	5
13. When I'm having trouble figuring something out, I usually ask ____ for help and advice.	1	2	3	4	5
14. ____ and I always make up easily when we have a fight.	1	2	3	4	5
15. ____ and I fight.	1	2	3	4	5
16. ____ and I loan each other things all the time.	1	2	3	4	5
17. ____ always helps me with things so I can get done quicker.	1	2	3	4	5
18. ____ and I always get over our arguments really quickly.	1	2	3	4	5
19. ____ and I always count on each other for ideas on how to get things done.	1	2	3	4	5
20. ____ doesn't listen to me.	1	2	3	4	5
21. ____ and I tell each other private things a lot.	1	2	3	4	5

Appendix H: Brock University Ethics Board Approval

DATE: November 20, 2008

FROM: Michelle McGinn, Chair

Research Ethics Board (REB)

TO: Anthony VOLK, Child & Youth Studies

Mike Ashton, Angela Book, Andrew Dane, Zopito Marini, Matthew Danbrook, Christine Polihronis, Heather Yates

FILE: 08-131 VOLK

Faculty Research

TITLE: Adolescent Relationships

The Brock University Research Ethics Board has reviewed the above research proposal.

DECISION: ACCEPTED AS CLARIFIED WITH NOTE

Please note:

Although you have not been explicit we assume that you will be recruiting participants for the control group using the same strategy as you have outlined for the athlete group but going to non-sport based organizations. If this is not the case, please inform the Research Ethics office.

This project has received ethics clearance for the period of **November 20, 2008 to May 30, 2009** subject to full REB ratification at the Research Ethics Board's next scheduled meeting. The clearance period may be extended upon request. ***The study may now proceed.***

Please note that the Research Ethics Board (REB) requires that you adhere to the protocol as last reviewed and cleared by the REB. During the course of research no deviations from, or changes to, the protocol, recruitment, or consent form may be initiated without prior written clearance from the REB. The Board must provide clearance for any modifications before they can be implemented. If you wish to modify your research project, please refer to http://www.brocku.ca/researchservices/forms to complete the appropriate form Revision or Modification to an Ongoing Application.

Adverse or unexpected events must be reported to the REB as soon as possible with an indication of how these events affect, in the view of the Principal Investigator, the safety of the participants and the continuation of the protocol.

If research participants are in the care of a health facility, at a school, or other institution or community organization, it is the responsibility of the Principal Investigator to ensure that the ethical guidelines and clearance of those facilities or institutions are obtained and filed with the REB prior to the initiation of any research protocols.

The Tri-Council Policy Statement requires that ongoing research be monitored. A Final Report is required for all projects upon completion of the project. Researchers with projects lasting more than one year are required to submit a Continuing Review Report annually. The Office of Research Services will contact you when this form *Continuing Review/Final Report* is required.

Please quote your REB file number on all future correspondence.

Research Ethics Office
Brock University
Office of Research Services, MC D250A
500 Glenridge Avenue, St. Catharines, ON, L2S 3A1
Phone 905-688-5550 ext. 3035
Fax 905-688-0748
Email: reb@brocku.ca
http:/www.brocku.ca/researchservices/Ethics_Safety/Humans/Index.php

Appendix I: Letter of Invitation and Consent Form from Extracurricular Clubs

Dear COACH/SPORTS GROUP

My name is Dr. Anthony Volk. I am a professor of Child and Youth Studies at Brock University. I am currently working with a team of faculty and student collaborators in a study of adolescent relationships. We are particularly interested in how extracurricular participation influences experiences of bullying and relationships in adolescents. As a result, we are interested in asking the members of your organization to participate in our study. Participation is purely voluntary, but prior to participating in the study, your members must obtain parental consent. To do so, we provide a sealed envelope for the parents that contains an information form, a permission form, and another sealed envelope that contains questionnaires for the teenagers to fill out. Those who return completed questionnaires forms will receive $10 for their participation. If parental consent is denied, the members still receive the money, but we don't use their data. The questionnaires are private, and they ask your members to discuss their experiences as a bully, a victim, and/or a bystander. They also are asked to describe their extracurricular experiences, and whether bullying is different within their activity versus at school.

No personal information is collected on any of the forms, so their confidentiality, and the confidentiality of your organization, is preserved. We therefore can't provide you with specific feedback regarding bullying in your organization, but we can provide you with the overall results of our study after it is completed in 2012. We do provide information regarding resources (including our lab) that the participants can access should they be experiencing problems with bullying.

Specifically what we would need from you and your organization is a time to come in and talk to your members about participating in the study. At this point we will explain the study, answer any questions they have, and pass out the forms. We will then arrange for a time to return to your organization to pick up any completed forms and answer any further questions, comments, or concerns that they may have. We also ask

that you complete a confidential ranking of the skill level of your players into higher, medium, and lower skill groups. These rankings will be completely confidential- athletes won't see them and we will destroy them immediately after they are entered, removing any link to names.

If you have any questions about this study, please feel free to contact **myself at tvolk@brocku.ca or 905-688-5550 Ext. 5368**, or the Brock University Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca. This study has been approved by Brock University Research Ethics. If you are interested in allowing us to come and talk to your members, please let us know.

Thank you very much for your consideration of our request!

[___] Yes, I am interested in allowing you to present your study

[___] No, I am not interested in allowing you to present your study

Signed :_____

Date: _____

Appendix J: Parent Information Sheet and Consent Form

Adolescent Relationships Parental Form

Please keep this form for your records.

Principal Investigator:
Dr. Anthony Volk, Professor
Department of Child and Youth Studies
Brock University
905-688-5550 xt. 5368
tvolk@brocku.ca

Your son/daughter has been invited to participate in a study that involves research into adolescent relationships. The purpose of this study is to better understand how adolescent relationships in one domain (e.g., parents) influence their relationship in another (e.g., self-esteem, sports, or peers). What follows are the specific goals of the study. ***In order to avoid biasing your son/daughter's answers, we ask that you DO NOT discuss these specific goals with him/her until after the study is completed (when these goals will be revealed to them).***

We are interested in exploring four main aspects of adolescents in the context of bullying. First, we are interested in how an adolescent's personality influences the likelihood that they will be a bully and/or a victim. Second, we are interested in how school or sport social relationships influence being a bully and/or a victim. Third, we are interested in studying how a belief in responsibility and guilt influence bullying compared to feelings of helplessness and shame. Finally, we are interested in whether being popular, or whether having close friends, has an impact on being a bully or a victim. So far, no one has looked at most of these factors in teenagers, and no one has looked at the combination of all these factors. We believe that answering these questions will give us a much better idea of what factors are involved in teenage bullying which will help us design programs and solutions that reduce the frequency and impact of bullying. We would like to note that a small number of the questions are about sexual activity and related behaviors.

WHAT'S INVOLVED

As a participant, your son/daughter has been asked to fill out questionnaires about themselves, their friends, their peers, their parents, and their basic demographics (e.g., age). Participation will take approximately 40 minutes of their time. We have included the participant information form for you to view. The coach will also submit a confidential ranking of the players on the team. No one else will see these rankings, and any ties to participant names will be destroyed immediately after the data has been entered to preserve confidentiality.

POTENTIAL BENEFITS AND RISKS

Possible benefits of participation include getting to know their own relationships better, and learning more about adolescent relationships in general. There also may be risks associated with participation in that some relationships are stressful to think about. If they find any part of this study to be stressful, they may contact the researcher, the Brock University Ethics board, or simply stop their participation. We also tell your son/daughter that "[they] may also freely discuss the study with parents or friends if [they] need to, although we would ask that [they] try not to talk to someone before [they] complete the study on [their] own (e.g., don't share answers until both have completed the study). Sharing answers before the study ends can complicate and/or change their own natural answers. We do not ask any specific questions regarding specific incidents, **so there are no issues of personal or legal liability for any of your son/daughter's answers, nor are we legally obligated to disclose any of their answers (including abuse or harm) to our questions.**

The study does involve incomplete disclosure, meaning we don't tell your son/daughter our specific aims and hypotheses until after they complete the questionnaire. This is done to minimize any bias in their responses. After completion, they will be completely informed of the study goals and asked to sign another assent form to acknowledge that they has been informed of the goals and is still OK with their data being used. If they are not OK with their data being used it will be

shredded, and they will still receive $10 gift card for participating. Thus, all participants will be offered $10 for their participation. They will receive this payment once the completed forms are returned, even if they are shredded afterwards.

CONFIDENTIALITY

Participants in this study will only be identified by a unique number that is tied to a master list kept by Dr. Volk. You, or they, may request the withdrawal of their data from the study within 5 years of their participation. Unique, identifiable data (such as date of birth, names) will not be collected.

As a parent, you will have to consent to your son/daughter's participation, **but you will not gain access to their answers. You may only control whether WE are able to view their answers or not by providing or withdrawing your consent**. *We feel that it is very important for the participants in our study to be able to know that their answers are completely confidential.* This will hopefully encourage them to be as honest as possible so we can really understand what is going on in their relationships. To this end, we again ask that you don't discuss the study with your son/daughter until they have completed it in order to avoid biasing their answers. Once the study is completed (i.e., after they have filled in and handed in the forms), you may of course discuss any related topic you feel fit. In the final form explaining the study, we encourage participants to talk to people whom they trust (including parents) about any related issues.

Data collected during this study will be stored on a secure computer and hard copies will be kept in a locked filing cabinet. Data will be kept for five years, after which time the data will be deleted or shredded. Access to this data will be restricted to Dr. Volk and his collaborators. Parents, friends, participants, and coaches will not have access to any individual data, although they may have access to the overall study results.

VOLUNTARY PARTICIPATION

Your teenager's participation is voluntary. They need not participate, even if you give parental consent. There are no organizational or personal consequences for not participating other than not receiving the $10. **Again, as a parent, you do NOT have access to your adolescent's individual results. You control whether or not we are able to view them by providing or withdrawing your consent for their participation.**

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available by late Spring or Early Summer on Dr. Volk's research web page (http://www.brocku.ca/vrbaby/research.html).

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions or concerns about this study, please contact the study coordinator, Dr. Volk, using the contact information provided above. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University #08-131. If you have any comments or concerns about the study ethics, or your adolescent's rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

If you have any concerns about your adolescent participating as a bully, or being a victim of bullying, please feel free to discuss the matter with other parents, teachers, friends, and/or any trusted individuals. For advice on how to talk to your teen or other individuals about bullying, we recommend www.bullying.org, http://www.lfcc.on.ca/bully.htm, and the Niagara Youth Connection (905-641-2118 ext. 5592). You may also feel free to contact me, Dr. Anthony Volk, at tvolk@brocku.ca (905-688-5550 ext. 5368) with any related questions or concerns.

Thank you for your help in this project!

Please keep this form for your records.

CONSENT FORM

I agree to allow my teen to participate in this study described above. I have made this decision based on the information I have read in the Information-Consent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this consent at any time and request that my son/daughter's data be removed from the study.

Name: _____

Signature: _____ Date: _____

Please return this form. If you consent to your son/ daughter's participation, please provide them with the envelope marked "Participant". If you do not consent to their participation, you may dispose of that envelope as you see fit.

Appendix K: Adolescent Information and Assent Form

Adolescent Relationships

Principal Investigator:
Dr. Anthony Volk, Professor
Department of Child and Youth Studies
Brock University
905-688-5550 xt. 5368
tvolk@brocku.ca

You are invited to participate in a study that involves research into adolescent relationships. The purpose of this study is to better understand how adolescent relationships are influenced by various aspects of their personal and social lives, including sexual activity and related behaviors.

WHAT'S INVOLVED

As a participant, you will be asked to fill out questionnaires about yourself, your social group, and your basic demographics (e.g., things like age, who you live with, etc.). It should take you about 40 minutes to complete the forms. Your coach will also submit a confidential ranking of the players on the team. No one else will see these rankings, and any ties to participant names will be destroyed immediately after the data has been entered to preserve confidentiality.

POTENTIAL BENEFITS AND RISKS

Possible benefits of participation include getting to know your own relationships better, and learning about adolescent relationships in general. There also may be risks associated with participation. Some relationships are tough to think about. If you find any part of this study to be stressful, you may contact the researcher, the Brock University Ethics board, or simply stop your participation. You may also freely discuss the study with parents or friends if you need to, although we would ask that you try not to talk to someone before they complete the study on their own (e.g., don't share answers until both of you have completed the study unless you feel it's really necessary). Sharing answers before the study ends can distort and/or change your own natural answers.

We do not ask for any specific incidents or events, so **there is no personal or legal liability associated with any of your answers, nor are we legally obligated to disclose any of your answers to our questions (including abuse and harm)**. If you have any concerns about specific behaviours or incidents, we strongly suggest that you discuss them with trusted individuals. These individuals could be parents, teachers, friends, or other trusted adults. You may also contact the Kids Help Phone at: http://www.kidshelpphone.ca/en/ (1-800-668-6868). It is important to know that you do not need to tolerate any form of abuse!

You will receive $10 in a gift certificate of your choice for your participation. You will receive this payment once you have returned the completed forms to us.

CONFIDENTIALITY

You will only be identified by a unique number that is tied your name. There is no way for anyone to identify the data beyond this number. Unique, identifiable data (such as exact date of birth, name, names of friends and family) will not be collected. Your parents will have to consent to your participation, **but they will not be able to read your answers** (*although they can request that any such data be deleted*). You also do not have to reveal your answers to any of your friends, peers, or anyone else other than the researchers in this study. The only exception is that Dr. Volk will have a copy of your consent form, with your participation number, stored in a locked, separate cabinet so that you can later request that your data be removed from the study if you wish. No other individual will have access to this link to your name, and Dr. Volk will ONLY access this information if you contact him asking to remove your data from the study within 5 years. Your name or ID will in no other way be involved with the data analysis or presentation.

Data collected during this study will be stored on a secure computer and hard copies will be kept in a locked filing cabinet. Data will be kept for five years, after which time the data will be deleted or shredded. Access to this data will be restricted to Dr. Volk and his collaborators. Your parents, friends, participants, and coaches will not have access to any individual data, although they may have access to the overall study results. So you do not have to worry about anyone finding out your answers, or about anyone following up on your answers, or about any consequences of the answers you provide.

VOLUNTARY PARTICIPATION

Participation in this study is purely voluntary. Whether you participate, or what questions you answer, is completely up to you. If you want to withdraw from this study at any time, you may do so without any penalty other than not receiving the $10 gift card. This research is not linked to your sporting organization, so there is no organizational penalty if you do not participate. If you would like to withdraw your data after you have completed the study, you must provide your unique identification number as it is the only way we have to identify your data.

However, before you can participate in this study, you MUST obtain parental consent. If you are reading this form, you should have already obtained parental consent. If you haven't, please provide your parents with the appropriate forms immediately. If you do not provide parental consent, you may NOT participate in this study. Again, your parents will not have direct access to your answers, but they do control whether WE are able to see your answers or not. If your parents do provide consent, you are not obligated to participate. That is your own decision. So you need their consent to participate, but that consent doesn't force you to participate.

PUBLICATION OF RESULTS

Results of this study may be published in professional journals and presented at conferences. Feedback about this study will be available by late Spring or Early Summer on Dr. Volk's research web page (http://www.brocku.ca/vrbaby/research.html).

CONTACT INFORMATION AND ETHICS CLEARANCE

If you have any questions about this study or require further information, please contact Dr. Volk using the contact information provided above. If you have any questions while you are filling out the forms, please feel free to contact Dr. Volk. This study has been reviewed and received ethics clearance through the Research Ethics Board at Brock University # 08-131 VOLK. If you experience any stress while participating in this study, please refer to debriefing form for a list of agencies you may contact.

If you have any comments or concerns about your rights as a research participant, please contact the Research Ethics Office at (905) 688-5550 Ext. 3035, reb@brocku.ca.

Thank you for your help in this project!

Please keep this form for your records.

ASSENT FORM

I agree to participate in this study described above. I have made this decision based on the information I have read in the Information-Assent Letter. I have had the opportunity to receive any additional details I wanted about the study and understand that I may ask questions in the future. I understand that I may withdraw this assent at any time.

Name: _____

Signature: _____ Date: _____

Please return this form.

Appendix L*:* Adolescent Debriefing Form

PLEASE READ THIS ONLY AFTER YOU HAVE FINISHED THE STUDY

Adolescent Relationships Debriefing

Thank you for your participation in our study of adolescent relationships! While we revealed our broad goal to you initially, we can now tell you the specific factors we were interested in studying. First, we were interested in whether athletes faced different rates and types of bullying and victimization than non-athletes. Very little research has been done on this topic, which we feel is an important one. Similarly, very little research has looked at bullying amongst adolescent with special needs or those classified as academically gifted, which we again felt was worth studying. We were also interested in the links between bullying, civility, parental care, and antisocial behavior. Finally, we were interested in how sexual/gender identity, harassment, and dating are both linked to each other as well as linked to bullying.

Overall, our previous research suggests that adolescents who participate in sports may be at a greater risk for participating as bullies and as victims. We are interested in looking at the individual, physical, and social reasons that might contribute to this increased risk. In plain English, we wanted to look at the big picture of how personal and social factors influence adolescent bullying and victimization in order to try to help prevent bullying and victimization amongst athletes.

Parts of this study may have been uncomfortable and/or difficult to complete. Bullying and victimization are unfortunately a common experience for many adolescents, but they aren't pleasant. If you have any concerns about participating as a bully, or being a victim of bullying, please feel free to discuss the matter with your parents, teachers, friends, and/or any trusted individuals. We can recommend www.bullying.org, http://www.kidshelpphone.ca/en/ (1-800-668-6868), and Niagara Youth Connection (905-641-2118 ext. 5592). In general, you can help prevent bullying by: not participating as a bully, intervening when others are being bullied (e.g., report the behaviour to an adult), and by actively disapproving of the bully's behaviour (e.g., telling them it's not cool). You may be able to reduce victimization by: talking to your parents, teachers, and/or friends and by trying to make supportive friendships.

Should you have any further questions or concerns, you may freely contact the study coordinator, Dr. Anthony Volk at (905) 688-5550 ext. 5368 (tvolk@brocku.ca), or if regarding the study's ethics, the Brock University Research Ethics Board at (905) 688-5550 ext. 3035 (reb@brocku.ca).

Please keep this form for your records.

Adolescent Relationships Informed Assent

Thank you again for participating in our study of adolescent relationships. This study involved a form of deception called "incomplete disclosure." This means we didn't tell you all of the details of the study up front, such as exactly what questions we were hoping to answer. We did this in order to avoid influencing any of your answers. It is a common event in psychology for participants to modify their answers if they know what the researchers are looking for.

Because this study involved incomplete disclosure, we have to ask again if you are still interested in participating in the study now that you know the whole truth. If you are still OK with the study, then please indicate so below and your data will be kept. If you are not OK with the study after being completely informed, you may request that your data be removed from the study. In this case, your data will be immediately removed and shredded/deleted.

I have read the debriefing and the informed assent and understand the nature of the incomplete disclosure in this study. I now:

GIVE MY PERMISSION TO USE MY DATA _____

DO NOT GIVE MY PERMISSION TO USE MY DATA _____

SIGNED: _____

DATE: _____

Please return this form